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September 18, 2000

001-3105-1

Miller Thomson
60 Columbia Way, Suite 600
Markham, Ontario
L3R 0C9

Attention: Mr. J.L. Martin, P. Eng.

RE: HYDROGEOLOGICAL ASSESSMENT
BACTERIOLOGICAL IMPACTS
WALKERTON TOWN WELLS
MUNICIPALITY OF BROCKTON
COUNTY OF BRUCE, ONTARIO

Dear Sirs:

Please find enclosed our final report on the investigation of the Walkerton groundwater supply.

We trust this report fulfils the requirements of the study and provides useful recommendations for securing the municipal supply. Should there be any questions concerning any of these matters, please contact the undersigned.

Yours truly,

GOLDER ASSOCIATES LTD.

D.R. Brown

D.R. Brown, M.Sc.
Prinicipal/Senior Hydrogeologist

DRB/cb

EXECUTIVE SUMMARY

This report provides the results of an investigation into hydrogeological conditions in the area of municipal water supply Wells 5, 6 and 7 in the community of Walkerton. All of these wells tap bedrock aquifers of the Bois Blanc and Bass Islands Formations. Well 5 is relatively shallow at just over 15 metres, while Wells 6 and 7 are deep drilled wells completed at over 70 metres. The purpose of the investigation was to examine the mechanism(s) by which bacterial contamination could have entered the wells in the spring of 2000 and to identify appropriate management options to minimize the potential for recurrence. This investigation was carried out on behalf of the Municipality of Brockton in response to Ministry of the Environment (MOE) Field Order F0007723 dated June 9, 2000.

The scope of work was to investigate, using hydrogeological tools and principles, how surface contaminants such as farm runoff could have accessed the bedrock aquifer in a relatively short period of time and with little apparent attenuation. In addition, appropriate management options were to be developed to minimize the potential for a recurrence.

It was understood that the bacteria of concern (E. coli 0157-H7) can only survive in the groundwater (i.e. outside an animal or human host) for up to thirty days. Part of the scope of work, therefore, was to define groundwater flow direction and velocity in the area near the wells to assess the thirty-day travel radius surrounding them.

In addition, microbial evidence suggested that the water produced by Well 6 was being affected directly by a source of surface water. Similar concerns were expressed for nearby Well 7. As a result, the work included an assessment of the surface water interaction effected by the pumping of these wells.

In the first phase, a comprehensive testing program was designed and carried out by Golder Associates (Golder), with the assistance of Lotowater Ltd., to assess the condition and integrity of each of the three main Walkerton production wells, as well as a number of former production and test wells which were in the area. This work culminated in Golder Associates Report No. 001-3105 (the Interim Report) entitled "Hydrogeological Assessment, Well Integrity Testing, Geophysical Surveys and Land Use Inventory, Bacteriological Impacts, Walkerton Town Wells, Municipality of Brockton, County of Bruce, Ontario", dated August 18, 2000.

The methods incorporated in phase two, which is the subject of this report, included a detailed, intrusive, shallow groundwater investigation to define actual hydrogeological conditions which might have allowed contaminated surface water to access the aquifer in the area of the wells. Using the results from the drilling of thirty-four monitoring wells and extended aquifer tests at both sites, preliminary numerical groundwater flow models were developed to estimate the zone of capture of the wells and the thirty-day travel times. Detailed water quality analyses, both chemical and bacteriological, were completed and the effect of the pumping of the wells was monitored in nearby surface waters and shallow groundwater.

EXECUTIVE SUMMARY Continued

Well 5 obtains water from a very shallow, very vulnerable bedrock aquifer which has been shown to be susceptible to contamination by bacteria from the time it was drilled. It is likely that the well became contaminated in May 2000 due to infiltration of manure contaminated runoff from normal farm practices in an area west of the well which lies within its thirty-day catchment. The very wet climatic conditions during this period likely exacerbated the problem by increasing the rate of runoff and downward migration to the aquifer. Ponded areas and springs in the immediate area of the well have been observed to rapidly infiltrate the ground upon pumping of the well.

As recommended previously, Well 5 should be plugged and abandoned to comply with Regulation 903 under the Ontario Water Resources Act. The two former production wells, Wells 1 and 2, should also be plugged and abandoned to comply with the legislation and to protect the shallow aquifer in this area from the poor chemical quality water which these wells produce. In our opinion, the shallow aquifer tapped by Well 5 at this location cannot be made adequately secure and should no longer be used as a source of public supply.

Municipal Well 6, obtains much of its water from intermediate water producing zones which have been shown to be hydraulically connected to shallow water in the nearby wetland and to a nearby private pond. It has not been conclusively demonstrated, however, that this is the reason for the occasional presence of bacteria in the well water. This could be the result of the entry of shallow waters via one or more of the casing penetrations identified above the water level in the well. These penetrations should be investigated to determine where they lead and should be plugged. In addition, to further secure the water produced by Well 6, downhole testing should be carried out to determine which water producing zones are more directly hydraulically connected to the surface. The casing should then be extended below this depth and similar remediation completed in the two nearby test wells to remove this pathway to the municipal aquifer.

Municipal Well 7 is considered a much more secure water supply, primarily due to the fact that it obtains its water from producing zones at greater depth, below 45.7 metres. Although aquifer testing here shows some hydraulic connection to Well 6 and thus to groundwater in the overburden, the chemical and bacteriological water quality have been shown to be superior to that at Well 6, as evidenced by much lower nitrate concentrations and only rare coliform levels. The adverse bacteriological results for the treated water from Well 7 during the very wet conditions in mid May 2000 remain unexplained, but if valid, they may have been the result of access to the well via either the poorly grouted nearby test well (TW1-86) or possibly at the connection of the overflow pipe to the casing. Test well TW1-86 should be properly grouted, following its completion as a multi-level monitoring well. The overflow pipe should be disconnected from Well 7 and the casing penetration sealed. In addition, a small area of suspected casing corrosion in Well 7 should also be investigated and corrected.

EXECUTIVE SUMMARY Continued

It is strongly recommended that the Municipality of Brockton establish a wellhead protection area (WHPA) around the Well 6 and 7 wellfield and develop appropriate land use management practices for the long-term protection of both the WHPA and the catchment area to protect the municipal water supply. This may involve purchase of some nearby lands and will require refinement of the preliminary groundwater modelling presented herein. At Wells 6 and 7, refinement of the model will require coring and testing of the bedrock overlying the water producing zones to help define vertical migration rates.

It is understood that specialized hydrological, microbiological and epidemiological reports have been or are being completed dealing with relevant water quality and quantity issues related to the Walkerton wells. Some of these findings may affect the conclusions and recommendations provided in this report. As a result, it may be necessary to prepare an addendum to this report following our review of these documents.

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1.0 INTRODUCTION

This report provides the results of an investigation of hydrogeological conditions in the area of municipal water supply Wells 5, 6 and 7 in the community of Walkerton (Figures 1 and 2). The purpose of the investigation was to examine the mechanism(s) by which bacterial contamination could have entered the wells and to identify appropriate management options to minimize the potential for recurrence. This investigation was carried out on behalf of the Municipality of Brockton, in response to Ministry of the Environment (MOE) Field Order F0007723 dated June 9, 2000. The recommended work plan was presented in a letter dated May 31, 2000 from Golder Associates Ltd. (Golder) to B.M. Ross and Associates Limited. Detailed work plans for shallow groundwater investigations at the two well fields were provided in Golder letters to the MOE dated July 14 and August 10, 2000.

2.0 SCOPE OF WORK

The scope of work was to investigate, using hydrogeological tools and principles, how surface contaminants such as farm runoff could have accessed the bedrock aquifer supplying the Walkerton municipal wells in a relatively short period of time and with little apparent attenuation. In addition, appropriate management options were to be developed to minimize the potential for a recurrence.

Expert advice provided by microbiologists Mr. Gary Palmateer of GAP Enviro Microbial Services (GAP) and Dr. Colin Mayfield of the University of Waterloo, indicated that the bacteria of concern (E. coli 0157-H7) can only survive in the groundwater (i.e. outside an animal or human host) for up to thirty days. Part of the scope of work, therefore, was to delineate the distance from the municipal wells that groundwater could travel in a thirty day period. In addition, microbial evidence suggested that the water produced by Well 6 was being affected directly by a source of surface water. As a result, the scope of work included an assessment of the surface water interaction effected by the pumping of this well.

Part of the scope of work included developing a detailed work plan to accomplish the objectives of the project. The work plan was, in part, provided in the May 31, 2000 Golder letter. However, as discussed in that letter, intrusive subsurface investigations to sample soil and groundwater for bacteriological analysis are rarely carried out and the risk of cross-contamination, and resulting false positives or false negative results, is high. The members of the committee were Dr. T.H. Beukeboom, P. Eng. of the MOE, Dr. D. Rudolph and Dr. C. Mayfield of the University of Waterloo, and Mr. D.R. Brown of Golder. This committee was requested to review both the work plans and specific protocols drafted by Golder and were of considerable assistance in refining the methodologies. In addition, Mr. N. Woerns of Gartner Lee Limited acted as a peer reviewer of the work on behalf of the Walkerton Public Utilities Commission (PUC) and also provided useful comments.

A technical review committee was establshed to review current practices respecting investigation of bacterial contamination and to ensure the development of investigation protocols that minimized the potential for extraneous bacterial contamination.

The investigation protocols were documented in letters dated July 14 and August 10, 2000. The investigations conducted for this study were based on these protocols.

The methods incorporated in Phase II, which is the subject of this report, included a detailed, intrusive, shallow groundwater investigation in the area of the wells to define local hydrogeological conditions which might have allowed contaminated surface water to access the aquifer. Using the drilling and aquifer test results and other background data, preliminary numerical groundwater flow models were developed to estimate the zone of capture of the wells and the thirty-day travel times.

3.0 BACKGROUND

The community of Walkerton (Figure 1) obtains its potable water supply primarily from three drilled wells which are located, as shown on Figure 2, in the former town as well as in the neighbouring former Township of Brant, now in the Municipality of Brockton. All of these wells tap bedrock aquifers of the Bois Blanc and Bass Islands Formations. Well 5 is relatively shallow at just over 15 metres, while Wells 6 and 7 are deep drilled wells completed at depths of over 70 metres.

In mid May 2000, based on the results of bacteriological sampling, two of the supplies, production Wells 5 and 7, were shown to contain significant levels of bacteriological contamination, including E. coli organisms. Due to the resulting human health impacts of this contamination, the MOE ordered the Municipality of Brockton to carry out investigations to determine how the contamination occurred so that efforts can be made to prevent a recurrence.

A comprehensive testing program was designed and carried out by Golder, with the assistance of Lotowater Ltd., to assess the condition and integrity of each of the three main Walkerton production wells, as well as a number of former production and test wells which were located in the immediate area. This work culminated in Golder Associates Report No. 001-3105 entitled "Hydrogeological Assessment, Well Integrity Testing, Geophysical Surveys and Land Use Inventory, Bacteriological Impacts, Walkerton Town Wells, Municipality of Brockton, County of Bruce, Ontario", dated August 18, 2000 and is referred to as the Interim Report.

The findings of the Interim Report are summarized in Section 4.0 below. This report should be read in conjunction with the Interim Report.

4.0 INTERIM INVESTIGATION SUMMARY

The first phase of hydrogeological investigation involved a review of available background information in order to gain a better understanding of the source of the Walkerton groundwater supply, the construction of the wells themselves and the local hydrogeological setting. This included a review of the Walkerton PUC files on the three municipal wells, geologic maps, selected MOE water well records, and hydrogeologic reports.

The background hydrogeological reports reviewed as part of the assessment were:

> "Report on an Evaluation of Shallow Aquifer in Vicinity of Town Wells 1 and 2",
> Ian D. Wilson Associates Limited, 1977.
>
> "Report on the Testing of the Town of Walkerton Well 4 (5)",
> Ian D. Wilson Associates Limited, July 28, 1978.
>
> "Report on Test Drilling and Well Construction, Town of Walkerton",
> Ian D. Wilson Associates Limited, July 26, 1982.
>
> "Test Drilling, Town of Walkerton, 1986 Program, Township of Brant",
> Ian D. Wilson Associates Limited, January 13, 1987.
>
> "Well Evaluation, Well 7, Town of Walkerton",
> Ian D. Wilson Associates Limited, July 17, 1987.

This Phase I field investigation also included surface geophysical surveys to confirm the local geology and identify areas of shallow bedrock or permeable overburden which might allow more rapid access of surface contaminants to the aquifer. The condition and integrity of the wells was assessed using downhole video and geophysical tools. The individual water producing zones in the bedrock aquifer were then identified and sampled for detailed bacteriological and chemical analysis. Finally, a land use inventory was carried out within an approximately one-kilometre radius of the wells.

Based on the results of the Phase I investigation, the following conclusions and recommendations were provided.

Walkerton Well 1 was the original deep production well drilled for the Town in 1949. It has always produced naturally poor chemical quality (mineralized) water and has not been used for a number of years as better quality supplies were developed. Downhole video inspection showed several holes in the casing due to corrosion which makes this well an insecure source for public supply. The casing deterioration is not considered to pose a risk to the water in Well 1 under non-pumping conditions; however, there is evidence that the poorer quality water from this well is affecting the shallow bedrock aquifer in nearby TW1. It was recommended that Well 1 be either maintained (repaired) or be properly plugged and abandoned to comply with the Ontario Water Resources Act (Regulation 903).

Former municipal Well 2 was excavated for inspection purposes as no documentation was available on its abandonment. Based on this inspection, the abandonment by the Walkerton PUC in 1999 was not considered to comply with the MOE guideline "Recommended Methods for Plugging Abandoned Water Wells" (1986) or with Ontario Regulation 903. It was recommended that this well also be properly plugged and abandoned.

Municipal Well 3, which is not routinely used, obtains water from the bedrock aquifer which is intersected at a depth of 8.5 metres and is overlain by several low permeability strata. Well 3 is located a short distance downgradient from a substantial cattle operation. The water supply is of generally good quality and well integrity testing indicated that the casing is grouted in place. However, the sonic log indicated several possible casing discontinuities which should be checked further if this well is to be used again.

Municipal Well 5 (Figure 3) taps a shallow bedrock aquifer which is overlain by as little as 2.4 metres of overburden materials. Within 30 metres of the well there are two springs which have been documented to stop flowing when Well 5 is being pumped. During pumping, water lying on the surface of the ground around one of the springs was observed to flow back down into the ground and, within one hour, turbid water was seen entering the well. Well 5 is located within a few metres of farm fields which are subject to fertilization with manure and application of farm chemicals. It is also located within a few hundred metres of several underground and aboveground fuel storage tanks. It was concluded that Well 5 is not secure, nor could it be made adequately secure, and it was recommended that it be properly plugged and abandoned.

Test well TW2, which was located about 6 metres from Well 5, was found to be a potential avenue from the surface to the aquifer due to the lack of grouting of its casing and it has since been plugged and abandoned, as has test well TW1 located approximately 65 metres to the northwest.

Municipal Well 6 (Figure 4) is a deep well which obtains water from several different producing zones in the bedrock. Chemical water quality is generally good, but nitrate concentrations are elevated with respect to background concentrations. Bacteriological analyses indicated little or no contamination of these zones at the time of sampling. Connections via nearby test wells were implicated by the MOE in 1983 in interference by Well 6 with a nearby spring; however, the casings in the test wells were extended in depth and grouted by the PUC. Allegations of interference with nearby surface water bodies have continued and recent analyses reported by G. Palmateer showed levels of aerobic sporeformers (a surface water indicator) in water from Well 6.

Municipal Well 7 (Figure 5) is the newest and most productive water source for the former Town of Walkerton. It was drilled in 1986 near Well 6, is completed in bedrock at a depth of 78 metres, and produces 3400 litres of water per minute. The majority of the water comes from a greater depth than that from Well 6. With few exceptions, the water quality from Well 7 has been good, both from a chemical and bacteriological perspective. There have reportedly been no aerobic sporeformers found in samples from Well 7, unlike the case in Well 6. Testing indicated that the casing is properly grouted; however, there is one small area of significant casing corrosion which was recommended to be investigated. In addition, the cement bond for the nearby test well TW1-86 was indicated to be in poor condition, so this well was recommended to be properly grouted. Based on the information available at the date of the Interim Report, and with these two issues corrected, Well 7 appeared to be a secure groundwater supply.

5.0 PROCEDURES

The investigations and analysis conducted to assess the hydrogeological conditions in the vicinity of each of the three production wells included the following:

- selection of drilling and sampling locations based on field observations and interpretation of geophysical profiles presented in the Interim Report;
- collection of shallow soil samples for the analysis of bacterial content;
- completion of monitoring wells into the bedrock at depths of about 6 to 8 metres below ground at the same location as the collection of the soil sample;
- completion of overburden monitoring wells immediately adjacent to the above bedrock wells;
- installation of staff gauges at nearby springs and surface water ponds;
- level surveying of monitoring wells and staff gauges;
- collection of depth to water measurements;
- installation of tranducers and a data logger at one well nest (MW-4S/D);
- completion of an aquifer test at each municipal production well;
- collection of water quality samples from monitoring and municipal production wells for the analysis of general chemical parameters and bacteria; and
- computer simulations of groundwater flow.

These investigations were completed using the protocols developed earlier with the technical review committee as discussed in Section 2.0. These protocols included the disinfection of all equipment used including drill augers and sampling equipment. In addition, monitoring of the effectiveness of disinfection procedures was conducted.

5.1 Shallow Groundwater Investigation

An investigation of the shallow groundwater in the area of each of the three production wells was carried out to characterize its physical characteristics, including hydraulic conductivity and flow direction, as well as its chemical and microbiological water quality. The results of the investigation were also used to assess the significance of surface water interaction due to pumping of the bedrock aquifer, and to construct models to assess the catchment areas and time of travel zones for the aquifer.

Details of the various aspects of the investigation and the procedures used are provided in the following sections.

Drilling Program

The drilling, sampling and well construction procedures were developed and implemented in a manner which was considered to minimize the potential for cross-contamination and the production of false positive and/or negative bacteriological results. However, since the boreholes (13, 14, 15 and 16) drilled southwest of Wells 6 and 7 were drilled for stratigraphic information only, the initial boreholes at the four points of geophysical interest were drilled using only standard decontamination procedures between each borehole. These boreholes were subsequently plugged with bentonite grout. Field procedures used for boreholes and monitoring wells later installed in this area followed the specified QA/QC protocols for drilling, sampling and installation. Borehole 23, located on private property south of Well 6, was drilled with standard drilling procedures following disinfection of all drilling and sampling equipment. The monitoring well at this location was constructed for water level measurements only.

The drilling was carried out using both track-mounted and truck-mounted, hollow-stem, power auger rigs supplied and operated by a specialist contractor, All-Terrain Drilling Limited. For all bedrock drilling, air rotary drilling tools were used. The drilling was done under the full-time supervision of Golder Environmental Division staff who logged the boreholes, collected and cared for the samples and supervised the monitoring well installations. The stratigraphy recorded during the drilling program and the monitoring well installation details are presented on the Record of Borehole sheets following the text of this report (Appendix A).

All drilling and sampling tools were cleaned before the start of drilling and between each use at the boreholes using the following sequence of procedures:

- pressure wash with hot water;
- wash by hand with Alconox detergent;
- rinse with disinfected tap water;
- disinfect with a solution of at least 50 milligrams per litre (mg/L) chlorine in water for a minimum 5 minutes; and
- pressure rinse with disinfected hot water.

Following the final rinse noted above, all drilling and sampling tools were handled only by personnel wearing a new pair of latex or vinyl gloves and, only if necessary, placed on new polyethylene sheeting before being used in the borehole. Selected photographs of the decontamination procedure are included in Appendix G. To initially evaluate the effectiveness of this procedure, swabs were taken from representative tools and submitted for bacteriological analysis that confirmed the suitability of the cleaning procedure (Table I). In addition, the disinfection solution and final rinse water were routinely analyzed in the field using free chlorine indicator strips and/or a Hach Pocket Colorimeter residual chlorine tester to ensure that there was appropriately high chlorine concentrations in the disinfection solution and sufficiently low residual chlorine in the rinse water.

At each borehole, drilling proceeded first through any topsoil layers and into the native underlying material to a minimum depth of 1 metre. Soil samples were collected from these (and underlying) layers using a continuous corer and placed into sterile containers for bacteriological analysis. Individual soil samples were taken from the inner part of the core using a clean, disinfected knife. Following drilling through this upper zone, a disinfected steel surface casing was installed and grouted into place using a bentonite-cement slurry mixed outside the hole with clean tap water confirmed by previous analysis to be free of coliform and E. coli bacteria. Selected photographs of the surface casing installations are included in Appendix G. It should be noted that bentonite is considered to be 'uninhabitable' by most bacteria due to its high ambient pH of approximately 10. After re-disinfecting the surface casing with either chlorine or open flame, drilling proceeded below the water table with the installation of a casing into the bedrock. Similar QA/QC procedures as described above were followed for the overburden casings, with the well casing extended to a maximum depth of approximately one metre below the bedrock surface and the annular space grouted to ground surface. Bedrock wells were drilled into the first main water-producing zone encountered. Where considered necessary, soil samples from the overburden drilling were analyzed for moisture content in order to assist in the initial assessment of the depth to water table in the overburden.

Well screen and casing consisted of new, 5-centimetre diameter Schedule 40 PVC material, cleaned and disinfected as described above for the drilling and sampling equipment. The sand pack for the screened interval was also chlorinated and rinsed before being placed in the annular space around the well screen up to a depth of approximately 0.3 metres above the top of the screen. Representative samples of the initial sand pack material and bentonite were also submitted for bacteriological analysis. The sand pack was then topped with bentonite (holeplug) which extended to surface in the shallow wells. In the deeper wells, the annulus above the Holeplug was completed to surface with bentonite grout. Casings were finished well above ground surface. The well was then secured with a lockable, steel, protective casing cemented in place.

Soil Sampling and Analysis

As mentioned previously, soil samples were collected in the shallow soils from the inside of the sample core. Samples were collected at depths of approximately 0.15 and 1.0 metres and transferred into sterile, wide-mouthed sample jars and kept chilled prior to delivery to the analytical laboratory. Samples were transferred under chain-of-custody procedures to MDS Laboratory Services (MDS) in London, Ontario, for analysis of total coliform and E. coli bacteria. Where significant bacteria counts were indicated at the 1 metre level, and based upon the results of the field observations for the borehole, additional samples were submitted from the upper zone in the next phase of drilling to assess the presence of bacteria in soils at greater depth.

Groundwater Sampling and Analysis

Prior to groundwater sampling, static water levels were measured in each well using a Solinst water level meter, or similar device. The stainless steel probes of the water level meters, the only part of the meter to contact the groundwater in the well, were disinfected in a chlorine solution and rinsed with distilled water, prior to every measurement. The chlorine solution and rinse were also monitored for appropriate high and low free chlorine residuals, respectively, in a manner similar to that for the drilling equipment.

For water sampling purposes, new standard Waterra inertial pumps and new polyethylene tubing were dedicated to each monitor following disinfection with chlorine solution and disinfected water rinses. A flow-through sample of rinse water was collected for bacteriological analysis.

Prior to any aquifer testing, all monitors were sampled under "static conditions" for bacteriological testing and also for a suite of general chemical parameters. In addition, specific samples were collected from the wells in the area of municipal Wells 6 and 7 for total aerobic sporeformer analysis.

Each monitoring well was evacuated of a minimum three well and sand pack volumes and until pH, conductivity and temperature measurements were consistent, or until the well was dry. Where wells were pumped dry, the sand pack was given time to drain and the well pumped dry a minimum of two additional times. Sampling of the well was then completed using the Waterra pumps. Slow purging and sampling rates were used so as to minimize the potential for drawing in particulate matter with attached bacteria that may not normally be mobile in groundwater. Samples were collected directly into laboratory prepared bottles with preservatives as necessary, stored in chilled coolers, and submitted under chain-of-custody procedures for chemical and bacteriological analysis. Duplicate samples were also submitted for both chemical and bacteriological sample analysis.

Bacteriological samples for total coliform and E. coli bacteriological testing were submitted under chain-of-custody procedures to MDS in London, Ontario, and also to the Ontario

Ministry of Health, Laboratory Branches, (MOH) in Etobicoke, Ontario. The latter were also analysed for the presence or absence of E. coli bacterium 0157-H7. Samples for general chemical analysis were submitted under chain-of-custody procedures to the Philip Analytical Services laboratory in London, Ontario, for analysis of a suite of parameters including organic and inorganic analytes. In addition, samples collected from monitors in the vicinity of Wells 6 and 7 were submitted to the GAP laboratory in London, Ontario, for analysis of total aerobic sporeformers, an indicator of the presence of surface water.

5.2 Aquifer Tests

Following the completion of the monitoring well installation and static condition sampling, long-term aquifer tests were carried out at both the Well 5 and the Well 6 and 7 sites. The municipal wells were pumped for a duration of thirty-six hours for Well 5, forty-eight hours for Well 6 and thirty-six hours for Well 7, with Well 7 being pumped concurrently during the latter thirty-six hours of the Well 6 aquifer test. While it was intended to pump Well 5 for forty-eight hours, it was determined, through consultation between Golder and MOE hydrogeologists, that adequate data had been acquired after thirty-six hours. For each test, water level measurements were taken in all monitor installations and in selected nearby private wells and surface water monitoring points prior to pumping, for the duration of the pumping test and for a period of recovery after pumping ceased.

Well 5

At the time of the aquifer test, Well 5 had been off line as a municipal supply for a number of weeks. Aside from the pumping during the well inspection and testing reported in Golder's Interim Report, the only pumping conducted from Well 5 was the continual withdrawal of about 10 imperial gallons per minute (Igpm) by the Ontario Clean Water Agency (OCWA) for an on-going experiment. For this aquifer test, Well 5 was pumped using equipment supplied and installed by Lotowater Ltd., with the water discharged from the well through a circular orifice weir into a steel tank, and subsequently discharged to a ditch located approximately 90 metres to the east of Well 5. With the assistance of OCWA personnel, treatment of the discharge water in the tank was calculated and maintained such that a 5 part per million (ppm) chlorine residual with a contact time of at least 5 minutes was achieved. Upon being pumped from the tank, the water was similarly dechlorinated using a sodium thiosulphate solution injected into the flow prior to discharge. The free chlorine residual was monitored in the discharge and maintained at a level of less than 1 ppm, and was generally less than 0.1 ppm.

The pumping rate of Well 5 was initially set at approximately 1.36 cubic metres per minute (m^3/min) (300 Igpm), but was decreased to approximately 0.9 m^3/min (200 Igpm) between approximately 10 and 15 minutes into the test, to accommodate the lower capacity of the discharge pump from the steel tank to waste. At approximately sixteen hours into the test, an additional discharge pump and dechlorination equipment were brought on line and the rate of pumping from Well 5 was returned to 1.36 m^3/min (300 Igpm) for the balance of the test.

Water levels were monitored in Well 5, in Golder monitoring wells MW-1S through MW-12D (Figure 6), in several locations in the springs to the north and south of the laneway into Well 5, and in a private drilled well located at municipal number 2137 on South Durham Road (SDR), approximately 875 metres southwest of Well 5 (Figure 2).

Subsequent to the pumping and partial recovery of Well 5, the adjacent monitoring wells were again purged and sampled in the same manner as for the static condition sampling undertaken prior to pumping. Water samples were collected from the wells for general chemical and bacteriological analyses in the same manner as described above for the static condition sampling.

Wells 6 and 7

At the location of Wells 6 and 7, a forty-eight hour pumping test was conducted using the line shaft turbine pumps resident in each of the municipal supply wells. Prior to the test, Well 6 had been off line for approximately six days, and Well 7 had been off line for a period of approximately fourteen hours. Prior to the pumping test, the nearby Golder monitoring wells, (numbered MW-17S through MW-23), the previous test wells associated with the municipal wells, several surface waters and one shallow groundwater monitor established by Golder were measured for static water level. The monitoring wells (excluding MW-21 and MW-23) had been sampled under static conditions in the manner described previously for the wells near Well

5. Other monitoring points included private wells at the [redacted] residence some 212 metres to the northeast of Well 7, the Bruce Tractor well located about 400 metres west of Well 6, the [redacted] Well located approximately 280 metres east of Well 6, and the [redacted] Well situated about 470 metres south-southeast of Well 6.

Well 6 was configured by Lotowater Ltd. to pump through about 730 metres of nominal 100-millimetre diameter hose, which discharged into the drain located approximately 600 metres north-northwest of Well 6. No treatment was necessary for the effluent from Well 6. Well 6 was pumped at an approximate rate of 1.27 m^3/min (280 Igpm) for a period of forty-eight hours. After twelve hours of pumping Well 6 at this rate, Well 7 was brought on line and pumped into the municipal water system at the rate used by OCWA. Initially, the rate was measured in an online flow meter as approximately 3.4 m^3/min (750 Igpm), but reduced through the test to a rate of approximately 3.1 m^3/min (680 Igpm) near the end of the thirty-six hours of pumping Well 7.

Water levels in municipal Wells 6 and 7, as well as the monitoring points mentioned above, were measured during the duration of the aquifer test and for a period of recovery after pumping ceased. Samples were collected from the pumping wells at regular intervals during the test, and were also subsequently collected from the Golder monitoring wells. In addition to the collection of samples for general chemistry and bacteriological analyses, samples were also collected for analysis of total aerobic sporeformers.

5.3 Groundwater Modelling

Simplified groundwater flow models were constructed as part of the technical assessment with the objective of estimating the potential groundwater capture areas for municipal wells 5, 6 and 7. As discussed in the Scope of Work, the capture zone with a thirty-day time of travel was of interest for the current assessment as it corresponds to the approximate lifespan of E. coli 0157-H7 in the groundwater environment. A two-year time of travel is commonly adopted in wellhead protection area (WHPA) management programs for the location of sentry wells, so this radius was also estimated to assist in the development of management considerations for the protection of the municipal water supply.

The overall approach to the groundwater modelling was to generate conservative capture zone estimates. Therefore, parameter assumptions and model conceptualizations were made such that the estimated capture zones for the municipal wells were somewhat conservatively estimated. Two separate groundwater models were developed; one model for Well 5, and a second model for Wells 6 and 7 combined. The groundwater models were constructed using, as input, the results of the pumping test analyses and hydrogeological information as summarized in Section 6.1.3 for Well 5 and Section 6.2.3 for Wells 6 and 7. Sections 6.1.5 and 6.2.5 describe the development of the groundwater flow models and the results of the capture zone analysis.

MODFLOW was used to estimate the steady-state distribution of hydraulic heads while MODPATH was used to complete the particle tracking analyses that define the time-related capture zones. Visual MODFLOW (Version 2.8.2 - Build 42 - June 26, 2000) was used as the pre- and post- processor for the groundwater model simulations.

6.0 RESULTS

6.1 Well 5

6.1.1 Surface Conditions

The area around Well 5 is indicated on the Site Plan, Figure 6 and on the aerial photograph, Figure 7. The general topography of the area is gently rolling in nature, with local high elevations to the south, southwest and northwest of Well 5, and a local low to the west. North and east of Well 5, the land generally slopes to local low topographic areas on the northwest and southeast side of the laneway to the well, and ultimately slopes away to the northeast. To the west of the site, the land is primarily agricultural in nature, comprising cattle and horse operations with a grazing area to the northwest of Well 5, and consisting primarily of corn and hay crops to the west-southwest and south of Well 5, respectively. Also to the south of Well 5 was a small farm, with a small turkey and chicken operation but primarily used as a working yard for a construction contractor. To the immediate north and east of Well 5 is a treed area which is a local topographic low, wet area which receives discharge from one of two springs which are understood to have been one of the original sources of water for the community. Beyond the treed area to the north and east is an area used primarily by the Municipality of Brockton and the Walkerton PUC as works yards, including PUC and Works Department buildings and equipment storage areas.

6.1.2 Subsurface Conditions

Stratigraphy

The map entitled "Quaternary Geology, Walkerton-Kincardine Area, Southern Ontario" (Ontario Geological Survey Map P.2956, 1986) shows the area of Well 5 to be covered by a "stony, sandy silt to silt till" known as the Elma Till. According to Map 1194 A, "Geology of the Bruce Peninsula Area Ontario" by B.A. Liberty (1965), Well 5 is founded in the Upper Silurian Bass Island Formation described by Liberty and Bolton (1971) as "buff and brown weathered, buff, cream and brown, fine-grained dolomite in even, vertically jointed beds from 2 to 12 inches thick...(to) as much as 2 feet thick." Total thickness in the area is reportedly between 40 and 49 metres, indicating that Well 5 is also completed in the Bass Islands. The Bass Islands Formation overlies the Salina Formation in which the original municipal Wells 1 and 2 were drilled and from which they obtained naturally occurring mineralized water. Bedrock surface topography and overburden thickness maps are provided on Figures 8 and 9.

On the Well 5 site and vicinity, twenty-three boreholes were advanced at twelve locations. The boreholes were numbered 1 through 12, with paired installations at each location except number 5 which was completed as a single overburden monioring well. The pairs comprised a shallow overburden borehole and a deeper borehole completed within the shallow bedrock, and were labeled with the suffix S for shallow and D for deeper (i.e. BH-1S and BH-1D). The approximate locations of the boreholes are shown on Figures 6 and 7 and Record of Borehole Sheets are provided in Appendix A.

The results of the drilling generally indicated relatively thin overburden deposits characterized by surficial topsoil with trace organics overlying silty sand to sandy silt with variable gravel and cobble fractions (till) which extended between 0.91 and 4.72 metres below ground surface, or to elevation 285.90 to 281.79 metres. The till was underlain by granular deposits consisting predominantly of sand and gravel, which may have comprised some locally highly weathered bedrock. Grain size curves of the representative overburden materials are included in Appendix B. These deposits generally extended to total depths of between 2.90 and 6.86 metres or elevations 285.56 and 278.96 metres, i.e., to the surface of the limestone bedrock. It should be noted that, in borehole 7, rock was first encountered between 5.33 metres to 5.64 metres depth, and again at 7.32 metres. Between the encountered rock was grey sand and gravel, which may include highly weathered limestone and/or may represent infilling of a cavity in the rock. All of the deeper boreholes were terminated in the limestone bedrock between total depths of 5.18 and 9.91 metres, or elevations 283.05 and 275.70 metres.

Geological cross sections trending approximately north-south and east-west through the study area around Well 5 are included as Section A - A and Section B - B, respectively, in Figures 10 and 11. These sections show the local stratigraphy, including the bedrock which is generally level to the south and west of Well 5 and then slopes relatively steeply downward to the northeast.

The results of the previously completed geophysical (ERI) completed were compared with depth to bedrock information from the subsequent drilling program. The apparent resistivity contour was found to be generally consistent with the bedrock surface along each of the sections. Some variation in the contour value at bedrock surface between sections reflects, in part, the variation in near surface conditions. However, the bedrock surface could not be interpreted locally in areas where near surface conditions varied significantly, such as near gravel roads, ponded water, etc. The depth to bedrock information from the boreholes was used to correlate the ERI survey results on cross sections on Figures C-3 to C-13, in Appendix C with the boreholes located along the section lines.

With the exception of BH-12S which was dry upon completion, groundwater was encountered in the boreholes in the Well 5 study area between elevations of 283.30 and 285.74 metres.

Soil Bacteriological Results

Shallow soil samples collected from the drilling of monitoring wells in the area of Well 5 were submitted to MDS in London, Ontario for analysis of E. coli and total coliform bacteria. The results were reported as coliform forming units per 100 grams (CFU/100g) and are summarized in Table II.

The results indicate the presence of total coliform bacteria above the analytical detection limit in all boreholes except 1D and E. coli bacteria in samples from boreholes 4D, 5, 7D, 11D and 12D. While the majority of the counts were relatively low, higher numbers of total coliforms were noted in near-surface samples in boreholes 7D, 8D, 11D and 12D with counts of 2800, 1000, 1600 and 7400 CFU/100g. Elevated E. coli counts were also noted for the same samples from boreholes 7D (10 CFU/100g), 11D (70 CFU/100g) and 12D (940 CFU/100g). It should be noted that, in each of these cases, the bacterial counts generally decreased in deeper samples from these boreholes.

6.1.3 Hydrogeology

Aquifer Test

The investigation at Well 5 included an extended aquifer test as described in section 5.2 above. The assessment of the thirty-day time of travel was based on the characterization of local hydrogeology as developed from the downhole testing conducted on Well 5, the installation and monitoring of twelve monitoring well nests and the results of the thirty-six hour aquifer test. Production Well 5 had been taken off line in late May 2000. Prior to this time, Well 5 was operated intermittently at a rate of about 1.36 m^3/min (300 Igpm). Groundwater levels were thus stable prior to beginning the test on August 30, 2000, although the shallow springs had continued to flow for most of this period and municipal Well 1 continued to flow from depth. The static groundwater levels at, and upgradient (west) from, Well 5 indicate a low hydraulic gradient of about 0.0013 metres per metre (m/m). To the east (downgradient) from Well 5, hydraulic gradients are steeper, approximately 0.011 m/m. A thirty-six hour pumping test was conducted at a rate of 0.9 m^3/min (200 Igpm) for the first eighteen hours at which time the rate was increased to 1.36 m^3/min (300 Igpm) for the last eighteen hours of the test. The pumping rate varied within the first fifteen minutes, but thereafter was stable. The drawdown trend stabilized in the first few minutes of pumping. Groundwater level data were collected at the production well and each of the monitoring well nests. At MW-4S/D, water level measurements were collected using transducers and a data logger.

Downhole testing at Well 5 indicated that the pumped water was derived from a water producing zone between a depth of 5.5 to 7.3 metres below ground. No water production was observed over the lower 7.4 metres of this well. Fractured bedrock was encountered during borehole drilling for each of the nearby deep monitoring wells, suggesting lateral continuity of the water producing zone observed during downhole testing at Well 5. Static groundwater levels (unpumped) indicate a generally eastward direction of groundwater flow in both the overburden and bedrock in the area upgradient of Well 5. Flow gradients and directions changed in the downgradient area, due to a lower hydraulic conductivity and/or to the effects of springs, the flowing of Well 1 and the possible drainage effect from the former inground water storage facility and piping near MW-10. Depths to bedrock range from 2.9 to 7.3 metres, but were typically less than 5 metres.

A summary of the drawdown at each monitoring location after eighteen hours and thirty-six hours of pumping are provided on Table III attached, along with the distance from the pumping well, Well 5. Aquifer test water level data were plotted on a series of time-drawdown graphs. Representative plots are provided in Appendix D.

Analysis of the test data provide the following observations:

- Pre-pump water levels were stable prior to pumping and no rainfall events or significant changes in barometric pressure occurred during the test interval.

- The drawdown trend in the pumping well stabilized immediately and totalled 0.63 metres at eighteen hours and 1.2 metres at thirty-six hours when pumping was terminated.

- Water level drawdowns at the monitoring well nests were about 0.3 to 0.47 metres at the end of the first period of pumping and about 0.6 to 0.9 metres at the end of the second pumping period. Drawdown was greater in the vicinity of the pumping well with lesser drawdown observed at the more distant observation wells. At the end of pumping, a total drawdown of 0.74 metres and 0.75 metres was recorded at the most distant observation well nest, MW-11S and MW-11D, respectively, located 240 metres upgradient (west) of Well 5. In addition, a private well at 2137 SDR, approximately 875 metres west of Well 5, showed a total drawdown of 0.12 metres during the test. It should be noted that three piezometers (MW-3S, MW-8S and MW-9S) showed an inconsistent response to pumping and were not considered further in the analysis.

- At each piezometer nest, the overburden and bedrock well showed essentially the same pattern of water level decline over time. This includes the deeper monitoring wells (MW-7D, MW-9D and MW-10D) screened just below the depth at which the 'flow zone' was observed at Well 5. Well nest MW-10 was the only monitoring location that recorded a greater drawdown in the overburden relative to the underlying bedrock.

- The pattern of drawdown over time at each well location was typical of an interconnected groundwater flow system characterized by horizontal flow to the pumping well.

- Calculated aquifer transmissivities range from about 1200 m^2/day to about 1600 m^2/day.

Discussion

As noted, the drawdown data are indicative of a shallow active groundwater flow system characterized by horizontal flow to the pumping well. The overburden and shallow bedrock are well interconnected and act as single hydrogeological unit as evident from the similarity of the response observed at the monitoring locations. The absence of significant fine grained (silt or clay) strata in the overburden indicates that this hydrogeological unit constitutes an unconfined aquifer that is recharged directly from precipitation and ponded surface water. This hydrogeological unit is estimated to extend to a depth of about 10 metres below the water table. This zone extends laterally from the vicinity of Well 5 to at least a distance of about 250 metres westward (upgradient). To the east of Well 5, hydraulic gradients are steeper indicating less transmissive aquifer conditions suggesting that the flow zones observed at Well 5 probably do not extend far to the east.

The transmissivity of this shallow active flow system ranges from about 1200 to 1600 m^2/day. For a saturated thickness of 10 metres, a hydraulic conductivity ranging from 1.4×10^{-3} metres per second (m/sec) to 1.8×10^{-3} m/sec is calculated. Based on assessment of the geological materials and the response to pumping, it is estimated that the effective bulk porosity of this flow system is about 5 per cent.

For the purposes of assessing the thirty-day time of travel at Well 5, the following hydrogeological parameter values were considered representative of local conditions:

• Transmissivity	1300 m^2/day
• Thickness of active flow zone	10 metres

• Hydraulic conductivity	1.5×10^{-3} m/sec (130 m/day)
• Porosity	5 %
• Hydraulic gradient (upgradient only)	0.0013 m/m

Groundwater Flow

Regional groundwater contours in the bedrock aquifer, based on water well record data are provided on Figure 12. Groundwater flow direction in the area of Well 5 is shown on Figures 13 and 14 for the overburden and shallow bedrock monitors, respectively. Flow in both sets of monitors is generally from west to east toward the well. However, flow in the overburden is locally dominated by the lower water levels measured at MW-10s to the north. The reason for this phenomenon is not clear, but may be related to the fact that MW-10S is located very near the old below ground water reservoir, so this area may be artificially drained by old watermains, for example. The pumping of Well 5 does result in an increased hydraulic gradient toward the well from the west, but the flow patterns do not change significantly (Figures 15 and 16). It should be noted that there is significant groundwater discharge from the springs near Well 5, particularly from the spring on the south side of the access lane, and groundwater flow toward this area is to be expected.

6.1.4 Groundwater Quality

General

The analytical data generated from samples collected during the original testing of Well 5 by Ian D. Wilson Associates Ltd. in 1978 indicated that the chemical water quality from Well 5 was generally good, with notable concentrations of elevated hardness (340 mg/L) and nitrates (4.6 to 5.0 mg/L). Bacteriological testing reported that 5 of 7 samples collected showed total coliform values of 2 to 12 organisms per 100 millilitre (mL) of sample, and four of those also reported faecal bacteria counts. A duplicate sample collected from Well 5 at the end of the seventy-two hour pumping test in 1978 indicated total coliform versus E. coli coliform counts of 0:0 in one sample, and 2:2 in the other sample.

As reported in Golder's Interim Report, a sample of water was collected from each of the three discreet water producing zones identified in the well. Considering that the uppermost zone

(Zone 1) produces over 95 per cent of the water for Well 5, and that the current investigation pumped water only from Zone 1 (since the lower zones have been sealed, as discussed in the Interim Report), the Zone 1 data are used for comparison purposes. The Zone 1 water quality data were similar to the 1978 data with the notable exceptions of a slightly higher pH (7.83 in Zone 1 versus 7.3 in 1978), a lower chloride value (16 mg/L in Zone 1 versus 32 mg/L in 1978), a higher turbidity in Zone 1 versus the 1978 value (7.05 Nephelometric Turbidity Unit (NTU) versus 0.18 Formazin Turbidity Unit (FTU)) and a higher iron value (0.15 mg/L) in Zone 1 versus the 1978 concentration (<0.05 mg/L). The bacteriological results from Well 5 in 1978 were comparable to those in the Interim Report, with Zone 1 indicating both total coliform and E. coli bacteria counts of between 2 and 7 per 100 mL of sample.

Non-Pumping Conditions

Copies of all laboratory reports for chemical and bacteriological analyses are provided in Appendices E and F.

Under static conditions prior to the aquifer test in the Well 5 area, groundwater samples from the monitoring wells which were submitted for general chemical analysis indicated generally consistent results over the area. Exceptions included relatively high electrical conductivity values in the samples from MW-9S and MW-9D, at values of 1600 and 1790 microsiemens per centimetre (µS/cm), respectively, and elevated values in the samples from MW-4D, MW-10S, MW-10D and MW-12D, which ranged from 901 to 1360 µS/cm. The analytical results are summarized in Table IV.

With respect to potential nutrient levels in the shallow groundwater, the highest nitrate plus nitrite concentration (Figure 17) came from the MW-8S sample, at 19.4 mg/L, but was also noted to be elevated in the sample from MW-12D, at 8.95 mg/L. It is noted that MW-12D is near a cattle pen, but the reason for elevated nitrate at MW-8S is unclear, but it is near the cornfield that was reportedly fertilized in April 2000. It was noted that the groundwater samples from the shallow wells generally had somewhat higher nitrate concentrations than in the accompanying deep bedrock groundwater sample. No significant trends for nitrate plus nitrite were observed between the before and after pumping samples. Similarly, organic nitrogen values, (equal to TKN less ammonia), were highest at concentrations of 2.68 and 0.75 mg/L, respectively, in MW-12D and MW-11S (Figure 18). There was no notable pattern to results from shallow versus deep samples or to samples taken before versus after the pumping of Well 5. Dissolved organic carbon (DOC) values in the non-pumping groundwater samples also indicated the highest value was in the sample from MW-12D, at 9.8 mg/L, while the balance of the shallow and deep sample DOC concentrations ranged from <0.5 to 2.6 mg/L. The overburden groundwater DOC values were generally slightly greater than from the adjacent deeper monitor installed into the shallow bedrock, with few exceptions.

The results of the bacteriological analysis of groundwater samples from the monitoring wells in the area of Well 5 in non-pumping conditions are summarized in Table V. It should be noted that, in general, results from the MOH were significantly higher than those from MDS. Based upon discussions with both laboratories, the lower results from MDS could be due to some settling of the sample sediment in the lab prior to membrane filtration. However, higher results could be a reflection of the additional day of sample storage, and transportation time to the MOH laboratory, when colonies could potentially have grown. All samples were shipped in chilled coolers which should have limited growth. Figure 19 illustrates the distribution of bacteriological results (MOH only) on the site.

For samples from monitors MW-1S to MW-12D, fourteen of twenty-two results from MDS indicated less than detectable levels of total coliform bacteria, and sixteen of seventeen samples from the MOH reported detectable total coliforms, with the only exception being the MW-10S sample. The highest results, greater than 8000 CFU/100 mL, were noted for samples from wells MW-4S, MW-5, MW-7D, MW-11S and MW-12D. E. coli were only detected in samples from MW-9S (10 CFU/100 mL) and MW-12D (>8000 and 24000 CFU/100 mL).

Pumping Conditions

After the thirty-six hour pumping test at Well 5, samples were again collected from all monitoring wells in the vicinity of the tested well with the results summarized in Table VI. Based upon those results, no significant changes in the nitrogen or nutrient concentrations were noted in the wells, with similar trends and peak values noted for the samples from the same wells as prior to the pumping period. Organic nitrogen values were in a similar range to those in the non-pumping conditions prior to the aquifer test, and were greatest in the sample from MW-12D at a concentration of 12.8 mg/L. Nitrate plus nitrite concentrations were again greatest in Well MW-8S, at a concentration of 24.1 mg/L, and were generally lowest in monitors MW-9 and MW-10 downgradient of Well 5. Considering the DOC results, it was observed that most deeper monitors completed in the shallow bedrock demonstrated a marginal increase in DOC concentration, while concentrations in most shallow monitoring wells remained higher than the corresponding deep well at the same location.

Raw water samples collected from the discharge from Well 5 near the beginning and end of the pumping test were submitted to Philip Analytical Services Corp. in London, Ontario for general chemical analyses.

The results of the analyses are summarized in Table VII and indicated an increase in nitrate plus nitrite from a concentration of 5.49 to 6.64 mg/L. Other increases of note included pH, conductivity, sulphate, alkalinity, chloride, hardness and total dissolved solids, while decreases in concentration were observed for total kjeldahl nitrogen, DOC, colour and turbidity. The majority of metals were below laboratory detection limits or showed little fluctuation in concentrations between the two samples.

Bacteriological samples were collected from Well 5 every three hours throughout the duration of the aquifer test. These samples were analysed for E. coli and total coliform bacteria, the results of which are summarized in Table VIII. Blind replicates of groundwater samples collected at the same time for bacteriological analysis from Well 5 were labelled well 5.S and 5.D in the field. In Table VIII, these replicates are labelled in pairs as Well 5 and Well 5-dup for the same sample collection time. Duplicate results for samples taken at the same time and analysed at the same laboratory were comparable. Samples collected on September 1, 2000 at 08:45 hours were analysed at both MDS and at the MOH. The results for this sample period were notably different as discussed generally above.

The results indicate populations of both total coliform and E. coli organisms in the groundwater samples from Well 5 but at relatively low levels. Total coliform increased with time for the first few hours, but then fluctuated between 2 and 15 coliform forming units per 100 millilitre (CFU/100 mL) for the remainder of the test. E. coli counts were equal to or less than the detection limit of 1 CFU/100 mL for all the samples.

The results of the bacteriological analysis of groundwater samples from the monitoring wells in the area of Well 5 after pumping are summarized in Table V. For the samples from monitors MW-1S to MW-12D, eleven of twenty-two results from MDS indicated less than detectable levels of total coliform bacteria, and twenty-one of twenty-two samples from the MOH reported detectable total coliforms, with the only exception being the MW-10D sample. The highest results, 9000 CFU/100 mL or more, were noted for samples from wells MW-5, MW-6D, MW-8D and MW-12D. E. coli were only detected in samples from MW-2S (110 CFU/100 mL), MW-2D (9000 CFU/100 mL), MW-4S (10 CFU/100 mL), MW-9S (20 CFU/100 mL) and MW-12D (6400 and 12000 CFU/100 mL).

6.1.5 Groundwater Modelling – Time of Travel

The following provides a summary of the input parameters for the Well 5 groundwater model. These parameters are based on the conceptualization of the flow system from the on-site testing and review of available information, as described in Section 6.1.3.

• Transmissivity	1300 m^2/day
• Hydraulic conductivity	1.5 x 10^{-3} m/sec (130 m/day)
• Thickness of active flow zone	10 metres
• Porosity	5 %
• Hydraulic gradient (upgradient only)	0.0013 m/m

Figure 20 illustrates the thirty-day time of travel and two-year time of travel for Well 5 using the above input parameters and under the assumptions below. These assumptions are considered conservative as they result in a somewhat greater extent of the capture zones. These assumptions are:

- Continuous pumping from Well 5 at a rate of 1.36 m^3/min (300 Igpm), rather than intermittently as when the well was operational.

- No vertical leakage from surface to the water table at the Well 5 aquifer.
- Travel times associated with vertical leakage are not simulated and not considered.
- Recharge from ponded surface water has not been simulated.

The model results show a capture zone with a thirty-day time of travel extending in a fairly wide band approximately 290 metres to the west of Well 5, as shown on Figure 20. While this distance does not take into account the time for surface contaminants to migrate down to the water table, which may take some time under normal circumstances, it is purposely conservative to account for circumstances such as the occurrence of areas of very thin overburden, a vertical conduit such as an abandoned well, dry soils that may develop extensive vertical fractures, or very wet conditions during which the migration time will be at a minimum. Based on the regional flow data from water levels reported in MOE water well records, the two-year zone of capture bends to the southwest and extends approximately 3 kilometres.

6.1.6 Surface Water Interaction

The degree of groundwater – surface water interaction resulting from the pumping of Well 5 was assessed, in part, by monitoring a staff gauge to observe water levels in two small ponded areas in the wetland northeast of the production well. Two springs (an expression of shallow groundwater) north and south of the well were also monitored, the latter of which flows into the ditch along the south side of the access road to the well and through a culvert which was also monitored. These results are summarized in Table III.

The shallower of the two ponded areas adjacent to the spring northeast of the well was approximately 10 centimetres deep at the start of the aquifer test. Within a half hour of the start of the test, this area was completely dry. A staff gauge was then set in the deeper ponded area further east. The water level at this location was observed to lower another 27 centimetres over the remainder of the test. The more dramatic effect in the smaller pond may be explained by its proximity to the spring and possibly a more direct connection to the aquifer supplying Well 5. These observations illustrate a direct connection between the shallow aquifer supplying Well 5 and the ponded surface water in the small wetland to the northeast. The full extent of the interconnection in this area was difficult to determine because the wetland also receives a significant input from the overflow which discharges from Well 1 further northeast. If Well 1 was plugged, the effect observed near Well 5 would no doubt be observed further to the east beneath the wetland.

The limited flow in the spring on the north side of Well 5 had stopped some time in the week or two before the aquifer test. In an attempt to monitor the effect of the operation of the well on the area of the spring, a steel drive point was installed directly at the spring's discharge. The water level, which was a few centimetres below ground surface at the start of the test, dropped 16.5 centimetres in the first thirty-six minutes of the test and the monitor was dry. When Well 5 was tested for flow profiling purposes in July of this year, this spring stopped flowing, the water around it was observed to run back down into the ground at the spring location, and turbidity was observed entering the well. A recent attempt to duplicate this phenomenon using sodium fluorescein, a common tracer dye, was unsuccessful over a five hour period. This was generally considered to be due to dilution in the well. At the request of the MOE, this test is planned to be re-run with a fluorometer, a sensitive field detection device.

Flow from the spring which discharges into the ditch on the south side of the access road (Figure 7) also dropped substantially during the pumping of Well 5 as indicated by measurements on a staff gauge in the ditch and measurements in the culvert which carries the flow across the access road.

6.2 Wells 6 and 7

6.2.1 Surface Conditions

The area of Wells 6 and 7 is shown on the Site Plan, Figure 21 and on the aerial photograph on Figure 22. The topography of the area is rolling in nature, with higher elevations particularly to the south and west and lower elevations to the immediate northeast along a low, treed wetland. Surface drainage is provided by a drain which flows through the wetland on an intermittent basis. The drain flows northwest, joining a branch from the west and then flowing northeast to eventually discharge to the Saugeen River. Land use in the area is primarily agricultural, with mostly cash crop operations. The nearest livestock operation is a small cattle farm located approximately 800 metres to the southeast. There are also several commercial operations nearby, including a farm equipment dealer to the southwest, a dog kennel to the south of Well 6, and an auto wrecker and repair operation to the southeast.

6.2.2 Subsurface Conditions

Stratigraphy

Quaternary geological mapping indicates that the immediate area of Wells 6 and 7 is covered with a deposit of "glaciofluvial outwash sand; minor gravel" which trends along the wetland which lies just northeast of the wells. The area generally is mapped as Elma Till, a "stony, sandy silt to silt till." Liberty (1965) maps the subcropping bedrock in the area of Wells 6 and 7 as the Devonian Bois Blanc Formation, a "grey, brownish grey, medium to fine-grained, fossiliferous limestone that weathers grey and into irregular beds from an inch to over a foot thick" (Liberty and Bolton, 1971). The Bois Blanc Formation is reported to be about 45 metres thick in the Bruce Peninsula and is generally considered in the drilling industry to contain "lost circulation" or water producing zones, indicating that it contains highly permeable strata. Wells 6 and 7, which are over 70 metres deep, also penetrate the Bass Islands Formation and are believed to be completed near the top of the Salina Formation.

At the Wells 6 and 7 site, total of 15 boreholes were advanced at 9 locations in the vicinity of the wells. The boreholes were numbered 13 through 23, with paired installations similar to those the Well 5 study area installed at locations 17, 18 and 19 in the wetland area to the northeast of the service road between the municipal wells, as well as at location 20 located approximately half way between Wells 6 and 7 on the southwest side of the service road. The remainder of the monitoring wells were single installations completed in the overburden. The approximate locations of the boreholes are shown on Figures 21 and 22.

The results of the drilling indicated overburden deposits characterized by surficial topsoil with organics (peat) overlying predominantly silty sand to sandy silt with variable gravel and cobble fractions, if any. This unit generally extended to depths of between 2.90 and 5.27 metres below ground surface, or to elevation 285.81 to 283.14 metres. In the case of boreholes 17, 18 and 19, located in the wetland area to the northeast, the topsoil was underlain by an organic deposit which extended to a total depth of 3.20 to 4.63 metres below ground surface. Beneath the granular deposits, limestone bedrock, which locally comprised some highly weathered bedrock near its surface, was encountered at the depths and elevations mentioned above. Grain size distribution curves for samples considered representative of the overburden materials are included in Appendix B. All of the deeper boreholes were terminated in the limestone bedrock between depths of 3.81 and 6.68 metres, or elevations 284.90 and 281.04 metres.

Geological cross sections trending approximately northwest to southeast through the study area between Wells 6 and 7 are included as Section C – C and Section D – D, on Figures 23 and 24. These sections show the local stratigraphy, including the bedrock surface which is generally uneven in each of the sections.

The results of the previously completed geophysical (ERI) survey were compared with depth to bedrock information from the subsequent drilling program. The apparent resistivity contour was found to be generally consistent with the bedrock surface along each of the sections. Some variation in the contour value at bedrock surface between sections reflects, in part, the variation in near surface conditions. However, the bedrock surface could not be interpreted locally in areas where near surface conditions varied significantly, such as near gravel roads, ponded water, etc. The depth to bedrock information from the boreholes was used to correlate the ERI survey results on cross sections on Figures C-3 to C-13 in Appendix C, with the boreholes located along the section lines.

During drilling, groundwater was encountered in the boreholes in the Well 6 and 7 study area between elevations of 285.82 and 288.89 metres.

Soil Bacteriological Results

Shallow soil samples collected from the drilling of monitoring wells in the area of Well 6 and 7 were submitted to MDS in London, Ontario, for analysis of total coliform and E. coli bacteria . The results were reported as CFU/100g and are summarized in Table IX.

The results indicate the presence of total coliform bacteria above the analytical detection limit in at least one sample from all boreholes and E. coli bacteria only in a sample from borehole 19D.

While the majority of the counts were relatively low, the highest number of total coliforms was noted in the near-surface sample from borehole 20D, with a count of 1600 CFU/100g. The only E. coli count was for sample 2A from borehole 19D, at the detection limit of 10 CFU/100g. Overall, the occurrence of bacteria in the borehole samples for the area of Wells 6 and 7 was notably lower than samples from boreholes in the area of Well 5.

6.2.3 Hydrogeology

Aquifer Test

The characterization of the local hydrogeological conditions at municipal production Wells 6 and 7 included a pumping test conducted at each well. The assessment of the thirty-day time of travel was based on the characterization of local hydrogeology as developed from the downhole testing conducted on Wells 6 and 7, the installation and monitoring of eleven monitoring wells at seven locations including four paired installations, monitoring of water levels in nearby surface waters and private wells, and the results of a forty-eight hour pumping test.

Production Wells 6 and 7 are operated on an 'as required' basis to meet local water demands at rates of 1.27 m^3/min (280 Igpm) and 3.4 m^3/min (750 Igpm), respectively. Prior to the start of the pumping test, Well 6 had been shut down for a week, while Well 7 was shut down for a period of fourteen hours. Water level measurements were collected in the production wells and a number of monitoring wells during this time. The forty-eight hour pumping test was conducted as follows: Well 6 was pumped at 1.26 m^3/min for forty-eight hours beginning at 8 p.m. on September 4, 2000 and both Wells 6 and 7 were pumped at a combined rate of 4.67 m^3/min to 4.4 m^3/min (968 to 970 Igpm) for the remaining thirty-six hours. Pumping from both wells was terminated at forty-eight hours, at 8 p.m. on September 6, 2000.

Downhole testing of these production wells indicated that pumped water is derived from the following water producing zones:

- In Well 6: between depths of 19.2 and 61.6 metres with 50 per cent of the observed flow occurring in the uppermost zone at 19.2 metres. The lower portion of the borehole, between a depth of 54 metres and the bottom at 72.2 metres, produced only 5 per cent of the total flow.

- In Well 7: between depths of 45.7 to 76.2 metres (the bottom of the hole). Half of the production (50 per cent) was observed below a depth of 72.4 metres. No flow was observed above a depth of 45.7 metres.

For the purpose of this assessment, the bedrock water producing zones at Well 6 are described as 'intermediate' and that at Well 7 is described as 'deep'.

The monitoring wells installed for the on-site groundwater investigation were completed to a maximum depth of 6.7 metres below ground, or about 2 metres below the top of rock.

On a regional basis, bedrock groundwater flows generally northeast and discharges to the Saugeen River located about 3 kilometres away. A hydraulic gradient of 0.002 m/m to the northeast was determined from the static water level measurements obtained at the well field and in four nearby domestic wells (Figure 22) taken immediately prior to test pumping.

A summary of the drawdown at each monitoring location and distance from each production Well is provided on Table X. This table includes the drawdown after twelve hours of pumping at Well 6 alone and at the end of pumping of both Wells 6 and 7. Aquifer test water level data were plotted on a series of time-drawdown graphs. Representative plots are provided in Appendix D.

Analysis of the test data provided the following observations:

- Pre-pump water levels may not have reached full equilibrium level prior to pumping and no rainfall events occurred during the test interval.

- Drawdown in the pumping well (Well 6) was 13.69 metres after twelve hours of pumping and, after forty-eight hours, totaled 16.08 metres. At Well 7, the drawdown at the end of testing was 7.09 metres. A drawdown of 0.06 metres was observed after twelve hours at TW1-86 (completed at a depth of 75 metres) located beside Well 7. This result suggests a hydraulic connection between the two production wells, i.e., a hydraulic connection between the 'intermediate' bedrock aquifer supplying Well 6 and the 'deep' bedrock from which Well 7 derives it's water. However, the casing in TW1-86 has been determined to be inadequately grouted and may provide a more direct connection to the shallow groundwater, so this is not conclusive.

- At the end of pumping, drawdown in the three test wells (TW series) ranged from 3.99 to 14.64 metres. These wells are understood to have been drilled at the time the production wells were drilled and were completed to about the same depth, i.e. about 75 metres below ground. Off-site domestic wells that were monitored during testing [redacted] Bruce Tractor) also exhibited drawdown between 3.0 and 3.4 metres. These wells are located between 212 and 815 metres from Well 7 and between 400 and 470 metres from Well 6.

- Less drawdown was observed at the shallow monitoring well pairs located in the vicinity of the pumping wells. These paired monitors are located between 60 metres and 410 metres from the production wells and the bedrock monitoring wells are screened only into the upper 2-3 metres of the bedrock. Total drawdown after twelve hours at these wells (MW-17, -18, -19 and -20) varied from about 0.1 to 0.33 metres. At each pair, the observed drawdown during this period was similar in both the overburden and bedrock with slightly greater drawdown in the bedrock at MW-18 and MW-20 located midway between the pumping wells. The pattern of drawdown in these wells reflect gradual vertical seepage to the deeper groundwater producing zones during pumping of Wells 6 and 7.

- For the on-site monitoring wells, the greatest drawdown was observed at MW-18 located midway between the two pumping wells (at a distance of 181 metres from Well 6 and 183 metres from Well 7). After twelve hours of pumping, the drawdown at this location was 0.26 metres in the overburden monitor (MW-18S) and 0.33 metres in the bedrock monitor (MW-18D). After a further thirty-six hours, when both Wells 6 and 7 were operating, the drawdown had increased to a total of 0.52 metres (MW-18S) and 0.65 metres (MW-18D).

- Significantly less drawdown was observed at MW-19 located toward the pond at a distance of 120 metres east of Well 6. At this location, a drawdown of 0.16 metres was observed in both the overburden and bedrock monitors after twelve hours of pumping that increased to 0.36 metres (overburden) and 0.41 metres (bedrock) after forty-eight hours. This is considered to indicate that the pond is recharging the aquifer during pumping and further, that the overburden and shallow bedrock respond directly to pumping of Wells 6 and 7.

- The incremental effects of pumping Well 7 resulted in slightly greater drawdown in bedrock [redacted] to the overburden. At MW-19 for example, the drawdown resulting from pumping Well 6 alone was the same (0.16 metres) in the overburden and bedrock monitors. After thirty-six hours with both wells pumping, bedrock water levels dropped a further 0.25 metres compared to the incremental drawdown in the overburden of 0.20 metres. Similarly, at MW-18, the incremental drawdown in the bedrock was 0.32 metres compared to 0.26 metres in the overburden.

Discussion

The results of the aquifer test indicate that the overburden, shallow bedrock and deep bedrock in the area of Wells 6 and 7 are hydraulically connected. These strata, in effect, comprise a single hydrogeological unit characterized by a higher water producing capacity in the deeper section. Under conditions of active pumping, shallow groundwater migrates vertically downward and then laterally in more permeable rock to the pumping wells. By virtue of its shallower producing zones (e.g. 19.2 metres), Well 6 is more susceptible to direct inputs of shallow groundwater.

The bulk of the total of 4.67 m^3/min of water pumped by the two wells is derived from below the depth of the bedrock monitors and likely from below 45 metres depth, as evident from the downhole flow profiling results. The transmissivity of the deeper section of the bedrock aquifer was determined from the analysis of the water level data obtained from TW1-82 and TW1-86. For these wells, transmissivity values of 290 to 440 m^2/day were calculated. Using an effective thickness of 35 metres for the main producing zone bedrock below a depth of 45 metres results in a hydraulic conductivity for this section of the bedrock of 1.2 x 10^{-4} m/sec (10 metres per day (m/day)).

For the purposes of assessing the time of travel at Well 6 and Well 7, the following hydrogeological parameter values are considered representative of local conditions in the 'deeper' bedrock. This characterization addresses horizontal flow within the 'deeper' zone and does not address the vertical component of flow downward from the water table which will supply a portion of the pumped water. The lateral representation of the thirty-day and two-year time of travel areas (Figure 20), based on this hydrogeological characterization, is conservative in that this zone will be shown to be somewhat more extensive than if a thicker zone of production was used. The characteristics assumed were following:

• Transmissivity	350 m^2/day
• Thickness of productive bedrock zone	35 metres
• Hydraulic conductivity	1.2 x 10^{-4} m/sec (10m/day)
• Porosity	5 %
• Hydraulic gradient	0.002 m/m

Groundwater Flow

Groundwater flow in the area of Wells 6 and 7 is illustrated for the overburden and the shallow bedrock, respectively, on Figures 25 and 26. The distribution of the monitoring wells allows for the determination of an approximate northwest direction of local groundwater flow along the wetland and in the direction of the surface gradient. The flow direction indicated by the shallow bedrock monitors has a more northeasterly component which is consistent with the flow direction indicated by the water level measurements in the four nearby private water wells prior to the aquifer test and in the map of regional flow in the bedrock (Figure 12). The gradient indicated by the nearby wells was 0.002 m/m.

6.2.4 Groundwater Quality

General

From the reporting of the initial testing of Wells 6 and 7 by Ian D. Wilson Associates Ltd. in 1982 and 1987, respectively, samples collected at those times indicated that the chemical water quality of water from these wells was considered generally good, with notable elevated concentrations of iron, turbidity and nitrate in the samples from Well 6. Water quality was considered excellent in the report, with no reported concentrations of the specific analytes above acceptable or desirable levels. Nitrate concentrations were low. Bacteriological testing was only included in the report for Well 6, and indicated that the two samples collected and analysed yielded less than two total coliform and zero faecal (E. coli) bacteria per 100 mL of sample. No bacteriological samples were reported in the Well 7 assessment.

As reported in Golder's Interim Report, a sample of water was collected from each of the discreet water producing zones identified for the wells. The overall water quality in Well 6 was variable, with some analyte concentrations such as nitrate, turbidity and iron displaying notable fluctuations between zones. Ontario Drinking Water Objective (ODWO) exceedances were noted for hardness, iron, turbidity, and aluminum. Elevated concentrations of sodium and nitrate were also reported, with the latter ranging from 2.52 to 9.34 mg/L in the individual sample zones. Bacteriological results indicated zero total coliform and zero E. coli counts in at least one sample from each zone. Only individual samples from each of zones 4 and 5/6 yielded positive bacteriological counts; however, a replicate sample from each zone yielded no detectable organisms. For Well 7, water samples collected by Golder indicated generally good chemical quality, and only one sample from Well 7 indicated any bacteria, with a result of two total coliform per 100 mL . In general, these results are considered comparable to the initial reported results for Wells 6 and 7, with the most notable exception of more elevated concentrations of nitrate in the samples from some zones in Well 6.

Non-Pumping Conditions

Samples collected from the monitoring wells in the area of Wells 6 and 7 prior to the aquifer test which were submitted for general chemical analyses indicated somewhat variable results, as summarized in Table XI with elevated chloride and conductivity noted for the samples from the

MW-17 and MW-20 locations. With respect to organic parameters, nitrate plus nitrite (Figure 29) were greatest in the groundwater samples from location MW-20, with the shallow and deeper wells yielding concentrations of 4.84 and 5.3 mg/L, respectively, compared to a range of less than 0.1 mg/L at MW-19 to 3.64 mg/L at MW-17. Organic nitrogen concentrations (Figure 30) were generally comparable for the sampled wells, ranging from 0.11 to 0.28 mg/L, with no discernible pattern of distribution between the shallow and deep well results. DOC concentrations in the monitor groundwater samples ranged from 0.5 to 1.6 mg/L, with an elevated result of 3.1 mg/L for the shallow well MW-22 sample. No pattern of DOC concentrations was apparent in the data.

The results of the bacteriological analysis of groundwater samples from the monitoring wells in the area of Wells 6 and 7 under non-pumping conditions are summarized in Table XII. As was previously noted, in general, results from the MOH were significantly higher than those from MDS. Figure 31 presents the distribution of the bacteriological counts (MOH only) in the monitoring wells across the site.

For samples from monitors MW-17S to MW-22, all nine sample results from MDS indicated less than detectable levels of total coliform bacteria, whereas eight of nine samples from the MOH results reported detectable total coliforms, with the only exception being the MW-19S sample. The highest results, greater than 8000 CFU/100 mL, were noted for samples from wells MW-17S, MW-18S and MW-18D. E. coli were not detected in any samples submitted to either the MOH or MDS laboratories.

Pumping Conditions

After the pumping of Well 6 for forty-eight hours, with Well 7 pumping concurrently for the latter thirty-six hours, samples were again collected from the monitoring wells in the area. Based upon those results, no substantial changes were observed in the general chemical data, as presented on Table XIII with wells at MW-17 and MW-20 remaining relatively high in chloride and conductivity. While the nitrate plus nitrite concentrations remained highest at location MW-20 and lowest at MW-19, it was noted that all shallow well samples had increased concentrations of this analyte in the post pumping samples versus the pre-pumping samples.

For organic nitrogen values, MW-21, which had not yielded sufficient water to sample prior to pumping, yielded the sample with the highest concentration at 1.95 mg/L, versus a range of less than 0.05 to 0.42 mg/L in the remaining wells. It was also noted that all deep well samples yielded slightly higher organic nitrogen concentrations after pumping as compared to the pre-pumping conditions. Similarly, the MW-21 groundwater sample collected after the pumping test yielded the highest value of DOC, at 10.9 mg/L, versus a range of less than 0.5 to 3.2 mg/L in the other wells. No patterns were observed in the post pumping data for DOC.

Raw water samples were collected from the discharge pipes for Wells 6 and 7 near the start and end of the pumping test and submitted to Philip Analytical Services Corp. laboratories in London, Ontario for general chemical analysis, with the results summarized in Table XIV. It should be noted that due to similarities in analyte concentrations for DOC, sulphate, chloride, calcium, potassium, sodium, strontium and zinc, and considering the higher nitrate concentration in the later Well 7 sample, it is our opinion that these latest results for samples from Wells 6 and 7 have somehow become transposed.

Additional samples collected from the Well 6 discharge at 1 and 4 minutes into the test were analyzed for turbidity and, along with the subsequent sample at 20:20 hours, indicated a decrease over the first three samples from a turbidity of 8.21 NTU to 1 NTU. Considering the rest of the results, increases in concentration were noted for pH, TKN, TDS and calculated conductivity, while decreases were observed for conductivity and magnesium.

A sample collected from the pond to the east of Well 6 on the final day of the test (September 6) was also analyzed for general chemistry. As shown on Table XIV, the results are not comparable to the results from either Wells 6 or 7.

Samples were collected from Wells 6 and 7 during the aquifer test generally every three hours throughout the duration of the test. These samples were analysed for E. coli and total coliform bacteria and the results are summarized in Table XII.

The results indicated either non-detectable or relatively low populations of bacteria in the groundwater samples collected from Well 6. Total coliform results fluctuated from less than the detection limit of 1 CFU/100 mL in most samples to 26 CFU/100 mL, with no apparent trend. All the E. coli bacteria were less than the detection limit of 1 CFU/100 mL.

Both E. coli and total coliform bacteria results were less than the detectable limit of 1 CFU/100 mL for all the samples collected from Well 7.

Post pumping samples collected from Wells 6 and 7 on September 6, 2000 at 19:45 hours were analysed at MDS and at the MOH. The results for these samples were comparable.

The results of the bacteriological analysis of groundwater samples from the monitoring wells in the area of Wells 6 and 7 after pumping are summarized in Table XII. For samples from monitors MW-17S to MW-22, eight of ten results from MDS indicated less than detectable levels of total coliform bacteria, and all ten samples from the MOH reported detectable total coliforms, ranging from 10 to 30000 CFU/100 mL in samples from MW-17D and MW-18D, respectively. E. coli were not detected in any samples submitted to either the MOH or MDS laboratories.

6.2.5 Groundwater Modelling – Time of Travel

Due to their proximity, Wells 6 and 7 were included in one groundwater model. The following provides a summary of the input parameters for the Well 6 and 7 groundwater model. These parameters are based on the conceptualization of the flow system from the on-site investigation and available information, as described in Section 6.2.3.

• Transmissivity	350 m^2/day
• Hydraulic conductivity	1.2×10^{-4} m/sec (10 m/day)
• Thickness of active flow zone	35 metres
• Porosity	5%
• Hydraulic gradient (upgradient only)	0.002m/m

Figure 20 illustrates the thirty-day time of travel and two-year time of travel for Wells 6 and 7 using the above input parameters and under the following assumptions. These assumptions are considered conservative as they result in a degree of over-prediction of the extent of the capture zones.

- Continuous pumping from Well 6 at a rate of 280 Igpm and Well 7 at a rate of 750 Igpm.
- The analysis is completed assuming confined aquifer conditions. There is no vertical leakage simulated to the bedrock aquifer for Well 6 or Well 7.
- Travel times associated with vertical leakage are not simulated.
- Potential recharge boundaries within the flow system have not been simulated (e.g. the wetland area does not provide a source of recharge to the aquifer).

The result of the modelling shows a capture zone with a thirty-day time of travel which extends to the southwest a distance of approximately 150 metres from Well 6 and 200 metres from Well 7. The two-year zone extends approximately 1.1 kilometres.

6.2.6 Surface Water Interaction

The possible interaction between Well 6 and nearby shallow groundwater and surface water has been a concern for some time. As discussed briefly in the Interim Report, the pumping of Well 6 was alleged by the MOE in 1983 to be responsible for drying up a spring and, as a result, the pond it discharged to located approximately 400 metres southeast of the well. It was considered at the time that, although Well 6 had been cased to a depth of 12.5 metres, casings in the two nearby test wells, TW1-82 and TW2-82, were much shallower and these wells may have provided the connection to the shallower zone. The casings in both wells were extended by the PUC to a depth of over 12 metres, but it is understood that the spring still did not recover.

Concern has also been recently voiced that occasional total coliform bacteria counts found in the raw water from Well 6 may be related to induced infiltration of surface water from the nearby wetland and/or an excavated private pond some 120 metres northeast of the well. As noted in the Interim Report, aerobic sporeformers, organisms normally found only in surface water, had also recently been found in the water from Well 6. Based on measurements of the depth of the pond by OCWA staff and a levelling survey by B.M. Ross and Associates Limited, the pond bottom is approximately one metre above the bedrock elevation at MW-19D.

One of the main thrusts of the shallow groundwater investigation at the Well 6 and 7 site was to further investigate the security, or lack of security, of these supplies from contamination by surface water interaction. This was addressed by constructing several monitoring wells in and near the wetland and between Well 6 and the private pond and monitoring them during the aquifer test, with the results presented on Table VIII. In addition, a series of water samples was collected from Well 6 at approximately three-hour intervals and submitted for analysis of total coliform and E. coli organisms, as well as for aerobic sporeformer counts.

The results of the aquifer test monitoring showed a significant drawdown of shallow groundwater levels in the wetland, illustrating a direct connection with the shallow bedrock and a corresponding connection with at least the main production zone in Well 6 at a depth of 19.2 metres. The wetland itself was virtually dry at the time of the test, but these results indicate that, during wetter periods, surface water lying in the wetland would be induced to recharge the shallow bedrock and to flow toward Well 6. This is also the case for water in the private pond, which was shown to drop approximately 10 centimetres over the period of the test. In addition, the drawdown of shallow groundwater at MW 19, i.e., in the direction of the pond, was considerably less than that to the northwest, indicating further that the pond is recharging shallow groundwater in this are when Well 6 is pumping. The on-going sources of this pond water are shallow groundwater from the northeast, as well as deep groundwater pumped from a well on this private property.

As mentioned previously, the results of bacteriological analyses for Well 6 groundwater samples showed low levels (1 to 26 CFU/100 mL) of total coliform organisms in twelve of the twenty samples collected during the forty-eight hour aquifer test, and no detectable E. coli bacteria. In addition, eleven of the sixteen samples showed low, but detectable, levels of aerobic sporeformers, typically counts of 1 or 2 per 500 mL, with a maximum of 3. In contrast, only two of the eleven samples from Well 7 showed detectable aerobic sporeformers in any of the samples collected and no detectable total coliform or E. coli bacteria were found. The results of the bacteriological and sporeformer analyses are presented in Tables XV and XVI, respectively.

7.0 POTENTIAL SOURCES AND PATHWAYS OF IMPACT

Contaminants of Concern

The contaminants of concern in the impact to the Walkerton water supply in mid May 2000 were microbiological organisms. Analytical results from this period showed high levels of total coliform and E. coli bacteria in Well 5. A particularly virulent strain of E. coli known as 0157-H7 which is known to originate primarily in the digestive system of cattle, was understood to be identified in the water system at this time. In addition, one unexplained high bacteria count was reported at this time for Well 7 in the treated stream, not in the raw water, and remains unexplained. As noted above, occasional bacteria counts, typically total coliforms, have also been identified in the raw water for Well 6. It should be emphasized that detailed microbiological and epidemiological investigations have recently been completed by GAP and Health Canada and full summaries of the bacteriological monitoring results in the wells and Walkerton water system will be provided in reports by these agencies and by OCWA.

Bacteria are ubiquitous and organisms such as total coliforms are typically found in large populations in shallow soils, in surface waters and in near surface groundwaters where they feed on organic matter and other natural or anthropogenic nutrients. Faecal bacteria such as E. coli are found in high populations in human and animal wastes, but can live outside the body for a period of time if physical-chemical conditions are not too hostile. As discussed above, based on available research, it is understood that the E. coli 0157-H7 has a life expectancy of up to thirty days outside the body.

In addition to bacteria, there are other physical and chemical indicators of impact from human and animal waste. Nitrogen compounds are the primary indicators which were examined as part of the investigation. **Nitrate** is the oxidized form of nitrogen which is most common in shallow groundwaters downgradient of a source of waste. The presence of **total Kjeldahl nitrogen (TKN)** in significant concentrations is indicative of nitrogen which is nearer the source of waste and has had less time to oxidize and degrade. The difference between the TKN and ammonia concentrations is referred to as "organic nitrogen" which is also present at elevated concentrations closer to the source. It should be emphasized that the presence of elevated levels of nitrogen compounds dissolved in groundwater does not necessarily mean that bacteria are also present. **Turbidity** in a well water sample can be indicative of the presence of surface water and, therefore, possibly bacteria. However, turbidity can also be the result of the disturbance of natural, inorganic soil and rock particles in the well itself.

Potential Sources

Well 5

The land use inventory for properties in the area of Well 5 (Figure 32) carried out in July and August 2000, and summarized in the Interim Report, identified five nearby properties which raise, or have raised, livestock. These include 201 SDR which is a farm which alternates between sheep and cattle; 2066 SDR which includes a hobby farm with chicken and turkeys; 2069 SDR which has only a few horses; 2094 SDR which has thirty-five to ninety head of cattle and occasionally spreads cattle manure on its fields; and 2137 SDR which had pigs and cattle in 1999, but has reportedly not been in operation in 2000. Comparing this information with the thirty-day capture zone analysis in Section 6.1.5 above, indicates that only one farm with cattle, 2094 SDR, falls within or near this zone.

In addition to the local livestock operations, faecal matter is also introduced to the soil and groundwater via domestic septic systems, potentially by leakage from sanitary sewers, and by birds and wild animals. As noted above, total coliform bacteria are abundant in shallow soil, particularly in organic soils, and in surface waters. In the area of Well 5, there are septic systems at each of the homes and commercial establishments to the south and west of the well site, two of which are in or near the thirty-day time of travel area. The nearest surface water body is a small ponded area in the wetland, immediately northeast of the pump house, which would vary in size seasonally and with rainfall events. The nearest stream in the estimated zone of capture is a municipal drain located approximately 480 metres west of Well 5.

Wells 6 and 7

Based on the land use inventory for properties in the area of Wells 6 and 7 (Figure 33) and the groundwater modelling of the zone of capture, there are no livestock operations in the area directly upgradient of Wells 6 and 7 and none in the thirty-day zone of capture. However, there are livestock operations within the surface water catchment area which would contribute runoff to the drain that flows near Wells 6 and 7. The nearest cattle operation is on a farm at 307 Bruce Road 2 on the south side of the road. Runoff from this property would be toward the wetland and the surface drain within it and then northwest toward the well field.

Other sources of faecal matter in the immediate area include domestic subsurface septic systems at nearby residences, including those some 100 metres west and 250 metres east of Well 6 and 200 metres northeast of Well 7. In addition, there is a farm with a few horses and a kennel operation some 450 metres southeast of Well 6. The property immediately east of Well 6 includes a large garden area which is reportedly fertilized with composted manure up to three years old. Some of this area drains to an on-site pond which overflows to the pond near Well 6. Birds and wild animals are also potential sources, particularly in the wooded areas near the wells.

Pathways

The primary natural pathway for a surface contaminant to reach the groundwater is by infiltration of precipitation and downward migration to the water table. Contaminants are typically dissolved in the infiltrating water, but small particles such as bacteria can be carried through some soils in suspension. The more porous and permeable a soil, the greater potential that bacteria may be carried through it. However, even tight, clayey soils may be penetrated through fracturing due to weathering effects or via plant root holes. As they migrate, however, bacteria tend to be adsorbed to fine soil particles or organic matter and anaerobic organisms tend to die in the aerobic zone above the water table. According to Matthess and Pekdegger ("Concepts of a Survival and Transport Model of Pathogenic Bacteria and Viruses in Groundwater", dated 1981) the favourable conditions for survival of microorganisms such as E. coli in the subsurface are low oxygen levels, neutral pH, and low levels of activity by other competing bacteria. As noted above, the life expectancy of E. coli organisms in the subsurface is up to thirty days. Although, once in permeable bedrock, they may migrate relatively quickly, considerable time may elapse due to the slow downward migration to the water table in some environments.

At both the Well 5 and Well 6-7 sites, the water table is within a few metres of the ground surface and overburden materials are locally quite permeable. Therefore, downward migration rates to the bedrock would be quite rapid, particularly under ponding conditions following a heavy rainfall such as that which occurred around May 12, 2000. At Well 5, the water producing zone itself is also very shallow and the well is cased to a depth of only 5 metres; therefore, vertical migration of surface contaminants could occur in as little as one day. At Well 6, the first identified water producing zone is at a depth of 19.2 metres and at Well 7 as deep as 45.7 metres. These wells are also cased to depths of 12.5 and 13.7 metres, respectively. In the absence of vertical fracturing, therefore, downward migration to the well intake area by natural means could be quite slow. The presence and degree of vertical fracturing has not been evaluated here, but the results of the aquifer test indicate that there is definitely some vertical hydraulic connection between the upper water producing zone and shallow groundwater and surface water, particularly at Well 6.

Artificial pathways are also a possible explanation for the rapid entry of surface contaminants into these wells. At Well 5, an unsealed test well, TW2, located only about 6 metres away would have provided a direct pathway for surface water or shallow groundwater to access the aquifer, particularly in wet conditions. At Well 7, the nearby test well TW1-86 has also been determined to be inadequately grouted. Although it is located in a raised area, it may provide a pathway for shallow groundwater to access the well. Video inspection of TW1-86 has suggested that there is a permeable horizontal connection between it and Well 7. Penetrations of the production well casings, either intentional or due to corrosion, also could create a direct pathway to the water supply from the subsurface outside the well. Water seepage was noted at the depth of the overflow pipe in Well 7 for a considerable period after pump startup during the aquifer test. This may be due to an inadequate seal at the connection or access of water to the discharge pipe and should be investigated. In Well 6, four unexplained, but apparently intentional, penetrations of the casing were noted by Lotowater above the water level in the well.

8.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this assessment, including the information presented in the Interim Report, the following conclusions are drawn and recommendations offered.

As noted in the conclusions of the Interim Report, Well 5 obtains water from a very shallow, very vulnerable bedrock aquifer which has been shown to be susceptible to bacteria from the time it was drilled. It is likely that the well became contaminated in May 2000 due to infiltration of manure from normal farm practices in an area west of the well which lies within its 30-day catchment and storm water runoff catchment areas. The very wet climatic conditions during this period likely exacerbated the problem by increasing the rate of runoff and downward migration to the aquifer. Ponded areas and springs in the immediate area of the well have been observed to rapidly infiltrate the ground upon pumping of the well.

As recommended previously, Well 5 should be plugged and abandoned to comply with Regulation 903 under the Ontario Water Resources Act. The two former production wells, Wells 1 and 2, should also be plugged and abandoned to comply with the regulation and to protect the shallow aquifer in this area from the poor chemical quality water which these wells produce. In our opinion, the shallow aquifer tapped by Well 5 at this location cannot be made adequately secure and should not be used as a source of public supply.

Walkerton Well 6, while much deeper than Well 5, obtains much of its water from intermediate water producing zones which have been shown to be hydraulically connected to shallow water in the nearby wetland and to a nearby private pond. It has not been conclusively demonstrated, however, that this is the reason for the occasional presence of coliform bacteria in the well water. This could be the result of the entry of shallow waters via one or more of the casing penetrations identified above the water level in the well. These penetrations should be investigated to determine where they lead and, regardless, should be plugged. In addition, to further secure the water produced by Well 6, downhole testing should be carried out to determine which water producing zones are more directly hydraulically connected to the surface. The casing should then be extended below this depth and similar remediation completed in the two nearby test wells to remove this pathway to the municipal aquifer.

Municipal Well 7 is considered a much more secure water supply, primarily due to the fact that it obtains its water from producing zones at considerably greater depth, below 45.7 metres. Although aquifer testing here shows some hydraulic connection to Well 6 and thus to groundwater in the overburden, the chemical and bacteriological water quality have been shown to be superior to that at Well 6, as evidenced by much lower nitrate concentrations and only rare coliform levels. The adverse bacteriological results for the treated water from Well 7 during the very wet conditions in mid May 2000 remain unexplained, but if valid, this occurrence may have been the result of access to the well via either the poorly grouted nearby test well (TW1-86) or possibly from the connection of the overflow pipe to the casing. Test well TW1-86 should be properly grouted, following its completion as a multi-level monitoring well. The overflow pipe should be disconnected from Well 7 and the casing penetration sealed. In addition, a small area of suspected casing corrosion in Well 7 should also be investigated and corrected.

It is strongly recommended that the Municipality of Brockton establish a WHPA around the Well 6 and 7 wellfield and develop appropriate land use management practices for the long-term protection of the municipal water supply in both the WHPA and the catchment area. Funding for such a project should be available under the MOE Provincial Water Protection Fund. Establishing a suitable WHPA may involve purchase of some nearby lands and will require refinement of the preliminary groundwater modelling presented herein. Parameter assumptions and model conceptualizations were made such that the capture zones for the municipal wells were conservatively estimated, particularly as they do not account for vertical migration rates from surface to the aquifer. At Wells 6 and 7, refinement of the model will require coring and testing of the bedrock overlying the water producing zones to better define vertical flow characteristics.

It is understood that specialized hydrological, microbiological and epidemiological reports have been, or are being, completed dealing with relevant water quality and quantity issues related to the Walkerton wells. Some of these findings may affect the conclusions and recommendations provided in this report. As a result, it may be necessary to prepare an addendum to this report following our review of these documents.

9.0 LIMITATIONS

This report was prepared for the exclusive use of Miller Thomson, the Municipality of Brockton and their authorized agents. It is intended to provide a hydrogeological assessment of current environmental conditions at the Well 5 and Wells 6 and 7 properties, located in the Municipality of Brockton, Ontario. Golder will not be responsible for any use of this report by any other party without our prior written authorization.

There is no warranty, expressed or implied, by Golder that this assessment has identified all potential contaminants at this site or that the subject site is free from any and all contamination from past or current practices other than that noted, nor that all issues of environmental compliance have been addressed. The assessment of environmental conditions and potential hazards at this site has been made using the historical information obtained as well as the results of chemical and bacteriological analysis of soil and water samples collected on the dates specified. No assurance is made regarding changes in conditions subsequent to the time of investigation.

The site conditions between samples and sampling locations have been inferred based on conditions observed at the sampling times and locations; however, it should be noted that conditions between and beyond sampling times and locations may vary. In addition, the assessment is dependent upon the accuracy of the analytical data generated through sample analysis and is limited to determining the presence of contaminants for which analyses have been conducted.

In evaluating the properties, Golder has relied in good faith on information provided by individuals, agencies and companies noted in this report. We assume that the information provided is factual and accurate. We accept no responsibility for any deficiency, misstatements or inaccuracies contained in this report as a result of omissions, misinterpretations or fraudulent acts of the persons interviewed or contacted.

Where references have been made to regulatory guidelines and documents, it should be noted that regulatory statutes and guidelines are subject to interpretation and these guidelines and documents and their interpretations may be subject to change over time.

If new information is discovered during future work, including excavations, borings or other studies, Golder should be requested to re-evaluate the conclusions presented in this report and to provide amendments as required.

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TABLE I

SUMMARY OF CONFIRMATORY BACTERIOLOGICAL ANALYTICAL RESULTS FOR DECONTAMINATION PROCEDURE

Walkerton, Ontario

SAMPLE ID	SAMPLE DATE	TOTAL COLIFORM[1]	E. COLI[1]
H-Water[2]	July 26/00[3]	< 1/100 mL	< 1/100 mL
Decon Swab	July 26/00	< 10/swab	< 10/swab
Filter Sand	July 26/00	< 10/gram	< 10/gram
Grout	July 26/00	< 10/100 mL	< 10/100 mL
H-Water	Aug. 26/00[4]	< 10/100 mL	< 10/100 mL
Rinse	Aug. 26/00	< 1/100 mL	< 1/100 mL

NOTES:

1. All analyses by MDS Laboratories in London, Ontario.
2. H-Water is water supplied from the Hanover municipal system.
3. Samples collected from decontamination procedure for drilling.
4. Samples collected from decontamination procedure for groundwater sampling.
5. Table to be read in conjunction with accompanying report.

TABLE II

SUMMARY OF SOIL SAMPLE BACTERIOLOGICAL RESULTS
WELL 5 AREA MONITORING WELLS

Walkerton, Ontario

SAMPLE ID		E. COLI[1]	TOTAL COLIFORM[1]
BH	Sa.		
1D	1A	<1	<1
1D	1B	<10	<10
2D	1	<1	3
2D	1B	<1	<1
2D	2	<1	2
3D	1A	<1	19
3D	1B	<1	<1
4D	1A	4	210
4D	1B	<1	20
4D	2	<10	<10
4D	3	<10	<10
5	1A	2	40
5	1B	<1	20
5	2A	<10	10
6D	1A	<1	70
6D	1B	<1	<1
7D	1A	10	2800
7D	1B	<10	<10
8D	1A	<10	1000
8D	1B	<10	30
9D	1A	<10	70
9D	1B	<10	150
10D	1A	<10	130
10D	1B	<10	<10
11D	1A	70	1600
11D	1B	<10	<10
12D	1A	940	7400
12D	1B	<10	80
12D	1C	<10	<10
12D	2	<10	<10
12D	2A	<10	<10
12D	2B	<10	<10
12D	3A	<10	<10

NOTES:

1. All results reported as CFU/100 grams.
2. Table to be read in conjunction with accompanying report.

TABLE III

SUMMARY OF DRAWDOWN IN OBSERVATION WELLS DURING 36 HOUR PUMPING TEST ON WELL 5

Walkerton, Ontario

WELL NUMBER	RADIAL DISTANCE FROM WELL 5 (m)	SCREEN INTERVAL (mbgs)	DRAWDOWN AFTER FOR 18 HRS. @ 0.9 m³/min		DRAWDOWN AT END OF FOR FINAL 18 HRS. @ 1.36		TRANSMISSIVITY* (m²/day)
			Time (min)	Drawdown (m)	Time (min)	Drawdown (m)	
Well 5	0	5 - 15	1092	0.63	2133	1.2	
MW-1S	42	2.1 - 3.6	1096	0.44	2176	0.9	1280.9
MW-1D	45	6.2 - 6.9	1093	0.47	2175	0.92	
MW-2S	100	3 - 4.5	1029	0.41	2193	0.85	1368.7
MW-2D	98	7.3 - 8.2	1029	0.4	2191	0.84	
MW-3S	47	1.8 - 3.35	1027	0.17	2196	0.34	1242.8
MW-3D	48	5.3 - 6.3	1027	0.43	2195	0.89	
MW-4S	26	2.3 - 3.8	1095	0.61	2195	0.91	1482.5
MW-4D	32	7.0 -7.9	1095	0.43	2195	0.9	
MW-5	10	0.9 - 2.4	1090	0.44	2172	0.95	705.9
MW-6S	72	2.3 - 3.8	1014	0.43	2178	0.89	1371.2
MW-6D	69	6.2 - 6.9	1014	0.43	2181	0.89	
MW-7S	43	2.75 - 4.25	1100	0.44	2184	0.89	1470.5
MW-7D	41	8.8 - 9.9	1100	0.46	2183	0.91	
MW-8S	82	1.2 - 2.7	1019	0.06	2188	0.13	1242.3
MW-8D	82	4.25 - 5	1019	0.42	2189	0.87	
MW-9S	103	2.3 - 3.8	1034	0.07	2186	0.01	
MW-9D	102	8.2 - 9.75	1035	0.14	2185	0.3	
MW-10S	112	2.5 - 4	995	0.23	2189	0.5	1616.7
MW-10D	112	8.2 - 9.75	995	0.12	2190	0.26	
MW-11S	242	1.15 - 2.35	988	0.34	2180	0.74	1373.0
MW-11D	240	4.3 - 5.2	988	0.36	2177	0.75	
MW-12S	206	1.32 - 2.84	982	dry	2182	dry	
MW-12D	206	4.5 - 5.4	982	0.27	2182	0.61	744.0
North Spring Sand Point	28	0 - 0.5	1095	dry	2135	dry	
North Ponded Area	40	0.48²	1046	0.11	2091	0.27	
South Spring		0.192²	1049	dry	2092	dry	
South Spring Culvert		0.125²	1048	0.08 (no flow)	2150	0.08 (no flow)	

NOTES:

1. * Theis Solution Method and the shallow and deep wells were analyzed together.
2. Represents initial reading at surface water monitoring station.
3. Table to be read in conjuction with accompanying report.

TABLE IV

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELL 5 - NON-PUMPING CONDITION

Walkerton, Ontario

PARAMETER	UNITS	MW-1S	MW-1D	MW-2S	MW-2D	MW-3S	MW-3D	MW-4S	MW-4D
SAMPLE DESCRIPTION		MW-1S	MW-1D	MW-2S	MW-2D	MW-3S	MW-3D	MW-4S	MW-4D
DATE SAMPLED		Aug. 26/00	Aug. 26/00	Aug. 26/00	Aug. 26/00	Aug. 26/00	Aug. 26/00	Aug. 29/00	Aug. 29/00
PHILIP LAB NO.		00-A023228	00-A023229	00-A023230	00-A023231	00-A023232	00-A023233	00-A023559	00-A023560
pH Value	pH units	7.55	7.55	7.56	7.46	7.89	7.72	7.54	7.85
Ammonia as N	mg/L	< 0.05	< 0.05	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrogen,T. Kjeldahl as N	mg/L	0.1	0.08	0.22	0.31	0.15	0.07	0.43	0.31
Nitrate as N	mg/L	7.61	7.52	6.19	6.16	5.17	5.08	6.47	3.59
Nitrite as N	mg/L	< 0.02	< 0.02	0.05	0.05	< 0.02	< 0.02	< 0.02	< 0.02
Nitrate + Nitrite as N	mg/L	7.61	7.52	6.24	6.21	5.17	5.08	6.47	3.59
Carbon, Diss. Org. as C	mg/L	0.7	< 0.5	1.6	2.2	0.8	0.7	0.7	0.8
Phosphorus,Diss.Orth as P	mg/L	< 0.01	< 0.01	< 0.01	0.03	< 0.01	< 0.01	< 0.01	< 0.01
Conductivity	us/cm	675	585	740	730	601	650	583	1010
Sulphate as SO4	mg/L	12	14	21	20	24	89	20	398
Alkalinity CaCO3	mg/L	290	275	322	309	315	264	286	236
Chloride as Cl	mg/L	45	19	47	55	16	8	11	10
Colour	TCU	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Silica, Reactive as SiO2	mg/L	7.22	7.07	7.93	7.31	11.1	8.16	8.68	15.3
Calculated Hardness CaCO3	mg/L	340	335	366	365	367	403	342	642
Turbidity	NTU	33	0.31	9.2	0.48	18.2	2.2	31.5	25.7
Bicarbonate as HCO3	mg/L	289	274	321	308	313	263	285	234
Carbonate CO3	mg/L	1	1	1	1	2	1	1	2
Total Cation	meq/L	8.32	7.22	9.23	9.22	8.24	8.45	7.32	13.31
Total Anions	meq/L	7.86	6.86	8.65	8.59	7.62	7.72	6.91	13.54
Ion Balance	% diff.	2.82	2.56	3.28	3.54	3.93	4.5	2.91	0.84
Calculated T.D.S.	mg/L	424	366	472	473	405	438	367	825
Calculated Conductivity	us/cm	758	632	830	827	714	772	641	1487
Saturation pH @4C	pH units	7.5	7.51	7.43	7.43	7.5	7.42	7.51	7.26
Saturation pH @20C	pH units	7.1	7.11	7.03	7.03	7.1	7.02	7.11	6.86
Langelier Index @4C		0.05	0.04	0.13	0.03	0.39	0.3	0.03	0.59
Langelier Index @20C		0.45	0.44	0.53	0.43	0.79	0.7	0.43	0.99

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELL 5 - NON-PUMPING CONDITION

SAMPLE DESCRIPTION		MW-5	MW-6S	MW-6D	MW-7S	MW-7D	MW-8S	MW-8D
DATE SAMPLED		Aug. 26/00	Aug. 26/00	Aug. 26/00	Aug. 26/00	Aug. 26/00	Aug. 26/00	Aug. 26/00
PHILIP LAB NO.		00-A023234	00-A023235	00-A023236	00-A023237	00-A023238	00-A023239	00-A023240
PARAMETER	UNITS							
pH Value	pH units	7.6	7.51	7.66	7.73	7.69	7.65	7.46
Ammonia as N	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrogen,T. Kjeldahl as N	mg/L	0.2	0.07	0.1	0.2	0.29	0.24	0.08
Nitrate as N	mg/L	6.89	6.85	7.5	6.85	6	19.6	5.67
Nitrite as N	mg/L	0.03	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Nitrate + Nitrite as N	mg/L	6.92	6.85	7.5	6.85	6	19.6	5.67
Carbon, Diss. Org. as C	mg/L	0.7	0.6	0.5	0.8	0.6	2.3	0.7
Phosphorus,Diss.Orth as P	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Conductivity	us/cm	667	630	583	596	543	640	550
Sulphate as SO4	mg/L	20	21	13	22	18	14	18
Alkalinity CaCO3	mg/L	295	289	269	298	268	263	276
Chloride as Cl	mg/L	37	27	22	10	10	18	9
Colour	TCU	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Silica, Reactive as SiO2	mg/L	8.99	7.66	6.89	8.84	7.63	5.76	7.75
Calculated Hardness CaCO3	mg/L	328	352	349	354	347	391	352
Turbidity	NTU	21.6	6.44	1.16	13.5	1.26	10	0.94
Bicarbonate as HCO3	mg/L	294	288	268	296	267	262	275
Carbonate CO3	mg/L	1	1	1	1	1	1	1
Total Cation	meq/L	8.36	8.15	7.66	7.77	7.2	8.11	7.28
Total Anions	meq/L	7.85	7.47	6.81	7.19	6.44	7.46	6.55
Ion Balance	% diff.	3.11	4.39	5.88	3.88	5.51	4.21	5.27
Calculated T.D.S.	mg/L	428	406	373	386	348	419	353
Calculated Conductivity	us/cm	786	724	656	680	611	682	617
Saturation pH @4C	pH units	7.5	7.48	7.5	7.48	7.5	7.53	7.48
Saturation pH @20C	pH units	7.1	7.08	7.1	7.08	7.1	7.13	7.08
Langelier Index @4C		0.1	0.03	0.16	0.25	0.19	0.12	-0.02
Langelier Index @20C		0.5	0.43	0.56	0.65	0.59	0.52	0.38

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELL 5 - NON-PUMPING CONDITION

	SAMPLE DESCRIPTION	MW-9S	MW-9D	MW-10S	MW-10D	MW-11S	MW-11D	MW-12D
	DATE SAMPLED	Aug. 29/00	Aug. 28/00	Aug. 28/00	Aug. 28/00	Aug. 29/00	Aug. 29/00	Aug. 29/00
	PHILIP LAB NO.	00-A023561	00-A023285	00-A023286	00-A023287	00-A023562	00-A023563	00-A023564
PARAMETER	UNITS							
pH Value	pH units	7.54	7.31	7.4	7.91	7.48	8.17	7.08
Ammonia as N	mg/L	0.09	< 0.05	< 0.05	< 0.05	0.16	< 0.05	< 0.05
Nitrogen, T. Kjeldahl as N	mg/L	0.43	0.24	0.37	0.26	0.75	0.21	2.68
Nitrate as N	mg/L	< 0.1	< 0.1	3.6	1.44	5.95	3.14	8.95
Nitrite as N	mg/L	< 0.02	< 0.02	< 0.02	0.07	< 0.02	0.04	< 0.02
Nitrate + Nitrite as N	mg/L	< 0.1	< 0.1	3.6	1.51	5.95	3.18	8.95
Carbon, Diss. Org. as C	mg/L	2.6	< 0.5	1.9	1.4	1.9	0.8	9.8
Phosphorus, Diss. Orth as P	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.12
Conductivity	us/cm	1600	1970	901	1360	502	603	1180
Sulphate as SO4	mg/L	639	1420	160	730	25	25	28
Alkalinity CaCO3	mg/L	365	191	358	168	227	287	520
Chloride as Cl	mg/L	49	3	15	9	10	18	52
Colour	TCU	< 5	< 5	6	6	< 5	< 5	56
Silica, Reactive as SiO2	mg/L	16.2	9.26	10.4	10.5	11.9	7.86	8.83
Calculated Hardness CaCO3	mg/L	966	1670	544	941	258	341	520
Turbidity	NTU	23.6	18.7	45.5	69.1	32.2	3.36	11.1
Bicarbonate as HCO3	mg/L	364	191	357	167	226	283	519
Carbonate CO3	mg/L	1	0	1	1	1	4	1
Total Cation	meq/L	22.53	33.62	11.68	19.41	6.16	7.4	13.89
Total Anions	meq/L	21.97	33.44	11.17	18.91	5.77	6.99	13.09
Ion Balance	% diff.	1.25	0.26	2.24	1.33	3.33	2.8	2.96
Calculated T.D.S.	mg/L	1318	2191	629	1216	324	368	743
Calculated Conductivity	us/cm	2460	4073	1128	2255	542	666	1119
Saturation pH @4C	pH units	7.08	6.93	7.16	7.26	7.68	7.49	7.06
Saturation pH @20C	pH units	6.68	6.53	6.76	6.86	7.28	7.09	6.66
Langelier Index @4C		0.46	0.38	0.24	0.65	-0.2	0.68	0.02
Langelier Index @20C		0.86	0.78	0.64	1.05	0.2	1.08	0.42

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELL 5 - NON-PUMPING CONDITION

SAMPLE DESCRIPTION		MW-1S	MW-1D	MW-2S	MW-2D	MW-3S	MW-3D	MW-4S	MW-4D
DATE SAMPLED		Aug. 26/00	Aug. 26/00	Aug. 26/00	Aug. 26/00	Aug. 26/00	Aug. 26/00	Aug. 29/00	Aug. 29/00
PHILIP LAB NO.		00-A023228	00-A023229	00-A023230	00-A023231	00-A023232	00-A023233	00-A023559	00-A023560
PARAMETER	UNITS								
Aluminum Al	mg/L	0.35	< 0.03	0.75	< 0.03	< 0.03	< 0.03	0.86	0.3
Barium Ba	mg/L	0.48	< 0.04	0.09	0.05	< 0.04	< 0.04	0.04	0.15
Beryllium Be	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bismuth Bi	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron B	mg/L	0.13	< 0.02	< 0.02	< 0.02	0.16	< 0.02	0.03	0.64
Cadmium Cd	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Calcium Ca	mg/L	84.1	84	89.7	92.9	77	110	82.4	193
Chromium Cr	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01
Cobalt Co	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Copper Cu	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Iron Fe	mg/L	0.47	< 0.02	0.71	< 0.02	< 0.02	0.04	0.59	0.17
Lead Pb	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Magnesium Mg	mg/L	31.5	30.3	34.5	32.2	42.5	31.2	33	38.8
Manganese Mn	mg/L	0.03	< 0.02	0.04	0.04	< 0.02	< 0.02	0.02	< 0.02
Molybdenum Mo	mg/L	0.04	0.03	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.03
Nickel Ni	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus as P	mg/L	< 0.02	< 0.02	0.03	0.03	< 0.02	< 0.02	< 0.02	< 0.02
Potassium K	mg/L	3.52	1.84	16.5	19.7	3.14	4.34	1.79	2.44
Silver Ag	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sodium Na	mg/L	33.1	11.3	34.3	32.9	18.9	6.43	10.3	9.78
Strontium Sr	mg/L	0.39	0.15	0.4	0.47	0.29	1.04	0.22	2.48
Tin Sn	mg/L	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07
Titanium Ti	mg/L	0.02	< 0.02	0.04	< 0.02	< 0.02	< 0.02	0.02	< 0.02
Vanadium V	mg/L	0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	0.01	0.01
Zinc Zn	mg/L	0.15	0.04	0.08	0.01	0.04	0.01	0.01	0.27

Table IV Continued

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELL 5 - NON-PUMPING CONDITION

SAMPLE DESCRIPTION DATE SAMPLED PHILIP LAB NO.		MW-5 Aug. 26/00 00-A023234	MW-6S Aug. 26/00 00-A023235	MW-6D Aug. 26/00 00-A023236	MW-7S Aug. 26/00 00-A023237	MW-7D Aug. 26/00 00-A023238	MW-8S Aug. 26/00 00-A023239	MW-8D Aug. 26/00 00-A023240	MW-9S Aug. 29/00 00-A023561
PARAMETER	UNITS								
Aluminum Al	mg/L	2.69	0.75	< 0.03	1.41	< 0.03	0.5	< 0.03	0.03
Barium Ba	mg/L	0.95	< 0.04	< 0.04	0.44	< 0.04	< 0.04	< 0.04	0.1
Beryllium Be	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bismuth Bi	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron B	mg/L	0.07	< 0.02	< 0.02	0.08	< 0.02	< 0.02	< 0.02	0.36
Cadmium Cd	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Calcium Ca	mg/L	81.5	88	88.8	84.4	88	86.8	89.7	202
Chromium Cr	mg/L	0.01	< 0.01	< 0.01	0.01	< 0.01	0.01	< 0.01	< 0.01
Cobalt Co	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Copper Cu	mg/L	0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01
Iron Fe	mg/L	3.64	0.7	0.04	1.53	0.02	0.34	0.02	0.16
Lead Pb	mg/L	0.004	< 0.001	0.001	0.024	< 0.001	< 0.001	< 0.001	< 0.001
Magnesium Mg	mg/L	30.3	32.2	31	34.7	30.8	42.4	31	112
Manganese Mn	mg/L	0.15	0.03	< 0.02	0.07	< 0.02	0.02	< 0.02	0.27
Molybdenum Mo	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Nickel Ni	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus as P	mg/L	0.13	< 0.02	< 0.02	0.04	< 0.02	< 0.02	< 0.02	< 0.02
Potassium K	mg/L	2.06	2.16	1.85	2.43	1.01	1.76	1.21	14.1
Silver Ag	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sodium Na	mg/L	40.1	24.3	14.4	14.7	5.62	5.69	5.14	65.9
Strontium Sr	mg/L	0.35	0.22	0.18	0.29	0.17	0.23	0.2	3.87
Tin Sn	mg/L	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07
Titanium Ti	mg/L	0.08	0.04	< 0.02	0.03	< 0.02	0.02	< 0.02	< 0.02
Vanadium V	mg/L	0.01	< 0.01	< 0.01	0.01	0.01	0.01	< 0.01	< 0.01
Zinc Zn	mg/L	0.25	0.04	< 0.01	0.15	0.03	0.05	0.02	0.09

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELL 5 - NON-PUMPING CONDITION

SAMPLE DESCRIPTION DATE SAMPLED PHILIP LAB NO.		MW-9D Aug. 28/00 00-A023285	MW-10S Aug. 28/00 00-A023286	MW-10D Aug. 28/00 00-A023287	MW-11S Aug. 29/00 00-A023562	MW-11D Aug. 29/00 00-A023563	MW-12D Aug. 29/00 00-A023564
PARAMETER	UNITS						
Aluminum Al	mg/L	1.24	< 0.03	0.94	0.62	0.21	0.2
Barium Ba	mg/L	< 0.04	0.18	0.1	< 0.04	0.04	0.07
Beryllium Be	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bismuth Bi	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron B	mg/L	0.18	0.27	0.07	0.05	< 0.02	0.09
Cadmium Cd	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Calcium Ca	mg/L	588	154	287	68.3	85.1	137
Chromium Cr	mg/L	< 0.01	< 0.01	0.01	0.01	< 0.01	< 0.01
Cobalt Co	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Copper Cu	mg/L	< 0.01	< 0.01	0.01	0.01	< 0.01	0.02
Iron Fe	mg/L	2.58	0.03	1.01	0.44	0.04	0.14
Lead Pb	mg/L	< 0.001	< 0.001	0.003	< 0.001	< 0.001	< 0.001
Magnesium Mg	mg/L	49.4	38.7	54.5	21.2	31.1	43.2
Manganese Mn	mg/L	0.09	0.06	0.04	< 0.02	< 0.02	0.2
Molybdenum Mo	mg/L	0.03	0.03	< 0.02	0.02	< 0.02	< 0.02
Nickel Ni	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus as P	mg/L	0.04	< 0.02	0.08	< 0.02	< 0.02	0.33
Potassium K	mg/L	2.61	3.95	7.67	3.39	2.54	101
Silver Ag	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sodium Na	mg/L	3.28	16.3	9.44	21	12.1	20.9
Strontium Sr	mg/L	14.3	1.73	3.82	0.26	1.33	0.55
Tin Sn	mg/L	0.08	< 0.07	0.07	< 0.07	< 0.07	< 0.07
Titanium Ti	mg/L	0.03	< 0.02	0.04	0.02	< 0.02	< 0.02
Vanadium V	mg/L	0.01	< 0.01	0.01	0.01	< 0.01	< 0.01
Zinc Zn	mg/L	0.01	0.47	0.06	0.01	0.01	0.07

NOTES:

1. All analyses by Philip Analytical Services Corp. in London, Ontario.
2. Table to be read in conjunction with accompanying report.

TABLE V

SUMMARY OF BACTERIOLOGICAL RESULTS
WELL 5 AREA MONITORING WELLS

Walkerton, Ontario

	NON-PUMPING CONDITIONS					AFTER PUMPING TEST				
	Total Coliforms[1]		E. coli[1]		0157-H7	Total Coliforms[1]		E. coli[1]		0157-H7
SAMPLE ID	MDS[2]	MOH[3]	MDS	MOH	MOH	MDS	MOH	MDS	MOH	MOH
MW-1S	<100	1500	<100	<10	ND[4]	<100	2400	<100	<10	ND
MW-1D	<10		<10			<20	500	<10	<10	ND
MW-2S	<100	92	<100	<10	ND	700	430	<100	110	ND
MW-2D	<10		<10			2800	1800	900	900	ND
MW-3S	<100	30	<100	<10	ND	200	500	<100	<10	ND
MW-3D	<10		<10			<100	600	<100	<10	ND
MW-4S	<10	24000	<10	<10	ND	<100	1000	<100	10	ND
MW-4D	4	300	<2	<10	ND	<20	4000	<10	<10	ND
MW-5	<100	46000	<100	<10	ND	<100	12000	<100	<10	ND
MW-6S	<100	930	<100	<10	ND	<100	1500	<100	<10	ND
MW-6D	<100		<100			<20	9000	<10	<10	ND
MW-7S	<100	2400	<100	<10	ND	<100	1200	<100	<10	ND
MW-7D	10	9300	<10	<10	ND	40	500	<10	<10	ND
MW-8S	460	2400	<10	<10	ND	5600	5000	<100	<10	ND
MW-8D	<10		<10			80	11000	<10	<10	ND
MW-9S	10	500	10	<10	ND	900	3000	<100	20	ND
MW-9D	<10	43	<10	<3		100	1200	<10	<10	ND
MW-10S	100	1100	<10	<3		300	1300	<100	<10	ND
MW-10D	10	<3	<10	<3		<20	<10	<10	<10	ND
MW-11S	<10	24000	<10	<10	ND	<100	900	<100	<10	ND
MW-11D	1	2500	<1	<10	ND	800	4100	<10	<10	ND
MW-12D	38000	>8000	24000	>8000	ND	10000	36000	6400	12000	ND

NOTES:

1. All results reported as CFU/100 mL.
2. Analyses by MDS Laboratory Services.
3. Analyses by Ontario Ministry of Health Laboratories Branch.
4. ND - Not detected
5. Table to be read in conjunction with accompanying report.

TABLE VI

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELL 5 - AFTER PUMPING TEST

Walkerton, Ontario

SAMPLE DESCRIPTION		MW-1S	MW-1D	MW-2S	MW-2D	MW-3S	MW-3D	MW-4S
DATE SAMPLED		Sept. 1/00	Sept. 1/00	Sept. 1/00	Sept. 1/00	Sept. 1/00	Sept. 1/00	Sept. 1/00
PHILIP LAB NO.		00-A023967	00-A023968	00-A023969	00-A023970	00-A023971	00-A023972	00-A023973
PARAMETER	UNITS							
pH Value	pH units	7.57	7.61	7.66	7.44	7.78	7.8	7.62
Ammonia as N	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrogen,T. Kjeldahl as N	mg/L	0.31	0.3	0.43	0.69	0.16	0.15	0.12
Nitrate as N	mg/L	5.98	7.57	6.27	5.56	5.43	5.49	5.82
Nitrite as N	mg/L	< 0.02	< 0.02	0.09	0.25	< 0.02	< 0.02	< 0.02
Nitrate + Nitrite as N	mg/L	5.98	7.57	6.36	5.81	5.43	5.49	5.82
Carbon, Diss. Org. as C	mg/L	1.7	0.8	2.2	3.3	0.8	0.8	1.2
Phosphorus,Diss.Orth as P	mg/L	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01
Conductivity	us/cm	700	579	752	810	606	615	600
Sulphate as SO4	mg/L	12	12	21	26	21	20	17
Alkalinity CaCO3	mg/L	324	267	315	298	300	296	279
Chloride as Cl	mg/L	34	21	50	71	9	10	7
Colour	TCU	< 5	< 5	8	12	< 5	< 5	< 5
Silica, Reactive as SiO2	mg/L	8.9	7.38	8.72	9.12	10.8	10.8	8.68
Calculated Hardness CaCO3	mg/L	396	351	371	370	387	392	368
Turbidity	NTU	9.22	1.71	3.9	11.2	5.33	10	15.3
Bicarbonate as HCO3	mg/L	323	266	314	297	298	294	278
Carbonate CO3	mg/L	1	1	1	1	2	2	1
Total Cation	meq/L	9.12	7.61	9.56	9.84	8.09	8.2	7.72
Total Anions	meq/L	8.12	6.72	8.6	8.92	7.08	7.01	6.55
Ion Balance	% diff.	5.85	6.18	5.29	4.9	6.65	7.82	8.25
Calculated T.D.S.	mg/L	440	368	479	504	384	384	360
Calculated Conductivity	us/cm	796	653	852	895	679	683	639
Saturation pH @4C	pH units	7.38	7.51	7.43	7.45	7.44	7.44	7.47
Saturation pH @20C	pH units	6.98	7.11	7.03	7.05	7.04	7.04	7.07
Langelier Index @4C		0.19	0.1	0.23	-0.01	0.34	0.36	0.15
Langelier Index @20C		0.59	0.5	0.63	0.39	0.74	0.76	0.55

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELL 5 - AFTER PUMPING TEST

	SAMPLE DESCRIPTION	MW-4D	MW-5	MW-6S	MW-6D	MW-7S	MW-7D	MW-8S
	DATE SAMPLED	Sept. 1/00	Sept. 1/00	Sept. 1/00	Sept. 1/00	Sept. 1/00	Sept. 1/00	Sept. 1/00
	PHILIP LAB NO.	00-A023974	00-A023975	00-A023976	00-A023991	00-A023977	00-A023978	00-A023979
PARAMETER	UNITS							
pH Value	pH units	7.84	7.62	7.53	7.7	7.88	7.86	7.73
Ammonia as N	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrogen, T. Kjeldahl as N	mg/L	0.08	0.08	0.12	0.2	0.17	0.11	0.26
Nitrate as N	mg/L	4.12	7.02	5.81	7.44	7.18	6.41	24
Nitrite as N	mg/L	0.02	0.13	< 0.02	< 0.02	0.07	0.05	0.05
Nitrate + Nitrite as N	mg/L	4.14	7.15	5.81	7.44	7.25	6.46	24.1
Carbon, Diss. Org. as C	mg/L	0.8	0.8	0.7	0.6	1.2	0.7	2.1
Phosphorus, Diss. Orth as P	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Conductivity	us/cm	990	695	680	663	608	559	664
Sulphate as SO4	mg/L	320	20	10	11	22	17	10
Alkalinity CaCO3	mg/L	239	279	321	261	289	275	250
Chloride as Cl	mg/L	9	38	20	43	9	7	12
Colour	TCU	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Silica, Reactive as SiO2	mg/L	9.68	8.53	8.56	6.92	10.1	7.75	6.67
Calculated Hardness CaCO3	mg/L	651	343	396	368	372	356	402
Turbidity	NTU	8.12	7.93	12.8	2.17	33.5	3.33	5.01
Bicarbonate as HCO3	mg/L	237	278	320	260	287	273	249
Carbonate CO3	mg/L	2	1	1	1	2	2	1
Total Cation	meq/L	13.49	8.68	8.62	8.51	8.08	7.38	8.24
Total Anions	meq/L	11.99	7.58	7.61	7.19	7.01	6.51	7.27
Ion Balance	% diff.	5.9	6.79	6.24	8.36	7.13	6.23	6.25
Calculated T.D.S.	mg/L	747	426	410	404	388	354	424
Calculated Conductivity	us/cm	1439	767	733	741	678	658	661
Saturation pH @4C	pH units	7.24	7.5	7.37	7.49	7.47	7.48	7.53
Saturation pH @20C	pH units	6.84	7.1	6.97	7.09	7.07	7.08	7.13
Langelier Index @4C		0.6	0.12	0.16	0.21	0.41	0.38	0.2
Langelier Index @20C		1	0.52	0.56	0.61	0.81	0.78	0.6

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELL 5 - AFTER PUMPING TEST

SAMPLE DESCRIPTION		MW-8D	MW-9S	MW-9D	MW-10S	MW-10D	MW-11S	MW-11D
DATE SAMPLED		Sept. 1/00	Sept. 1/00	Sept. 1/00	Sept. 1/00	Sept. 1/00	Sept. 1/00	Sept. 1/00
PHILIP LAB NO.		00-A023980	00-A023981	00-A023982	00-A023983	00-A023984	00-A023985	00-A023986
PARAMETER	**UNITS**							
pH Value	pH units	7.71	7.79	7.41	7.53	9.11	7.36	7.72
Ammonia as N	mg/L	0.05	< 0.05	0.06	0.27	< 0.05	< 0.05	< 0.05
Nitrogen,T. Kjeldahl as N	mg/L	0.22	0.3	0.36	0.28	0.1	0.67	0.19
Nitrate as N	mg/L	6.32	< 0.1	< 0.1	2.11	1.93	7.15	3.37
Nitrite as N	mg/L	0.02	0.04	< 0.02	0.03	< 0.02	0.39	< 0.02
Nitrate + Nitrite as N	mg/L	6.34	< 0.1	< 0.1	2.14	1.93	7.54	3.37
Carbon, Diss. Org. as C	mg/L	1	2.5	< 0.5	2.6	0.7	1.9	0.8
Phosphorus,Diss.Orth as P	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Conductivity	us/cm	558	1540	2000	1040	1300	500	581
Sulphate as SO4	mg/L	22	626	1440	222	800	22	25
Alkalinity CaCO3	mg/L	265	359	181	400	16	199	274
Chloride as Cl	mg/L	8	53	3	10	8	11	18
Colour	TCU	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Silica, Reactive as SiO2	mg/L	7.94	16	8.53	13	8.72	12.6	7.85
Calculated Hardness CaCO3	mg/L	349	1010	2190	738	951	244	361
Turbidity	NTU	1.51	6.55	2.32	8.85	7	8.72	2.9
Bicarbonate as HCO3	mg/L	264	357	181	399	14	199	273
Carbonate CO3	mg/L	1	2	0	1	2	0	1
Total Cation	meq/L	7.3	23.43	44.25	15.45	19.5	6.1	7.82
Total Anions	meq/L	6.44	21.7	33.66	13.05	17.32	5.29	6.75
Ion Balance	% diff.	6.28	3.85	13.6	8.41	5.9	7.17	7.33
Calculated T.D.S.	mg/L	353	1322	2411	779	1202	311	369
Calculated Conductivity	us/cm	617	2494	4652	1436	2393	516	674
Saturation pH @4C	pH units	7.51	7.05	6.84	6.96	8.24	7.79	7.48
Saturation pH @20C	pH units	7.11	6.65	6.44	6.56	7.84	7.39	7.08
Langelier Index @4C		0.2	0.74	0.57	0.57	0.87	-0.43	0.24
Langelier Index @20C		0.6	1.14	0.97	0.97	1.27	-0.03	0.64

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELL 5 - AFTER PUMPING TEST

	SAMPLE DESCRIPTION	MW-12D	DUP-S	DUP-D
	DATE SAMPLED	Sept. 1/00	Sept. 1/00	Sept. 1/00
	PHILIP LAB NO.	00-A023987	00-A023989	00-A023990
PARAMETER	UNITS			
pH Value	pH units	7.07	7.42	7.63
Ammonia as N	mg/L	< 0.05	< 0.05	< 0.05
Nitrogen, T. Kjeldahl as N	mg/L	3.46	0.22	0.19
Nitrate as N	mg/L	8.5	4.22	7.31
Nitrite as N	mg/L	0.03	< 0.02	< 0.02
Nitrate + Nitrite as N	mg/L	8.53	4.22	7.31
Carbon, Diss. Org. as C	mg/L	12.8	2	0.9
Phosphorus, Diss. Orth as P	mg/L	0.07	< 0.01	< 0.01
Conductivity	us/cm	1240	746	660
Sulphate as SO4	mg/L	31	13	10
Alkalinity CaCO3	mg/L	548	370	268
Chloride as Cl	mg/L	68	28	34
Colour	TCU	60	< 5	< 5
Silica, Reactive as SiO2	mg/L	8.87	10.2	7.16
Calculated Hardness CaCO3	mg/L	595	446	368
Turbidity	NTU	8.2	2.95	5.06
Bicarbonate as HCO3	mg/L	547	369	267
Carbonate CO3	mg/L	1	1	1
Total Cation	meq/L	15.69	9.95	8.45
Total Anions	meq/L	14.13	8.76	7.05
Ion Balance	% diff.	5.22	6.36	9.05
Calculated T.D.S.	mg/L	814	470	397
Calculated Conductivity	us/cm	1259	855	721
Saturation pH @4C	pH units	6.98	7.27	7.48
Saturation pH @20C	pH units	6.58	6.87	7.08
Langelier Index @4C		0.09	0.15	0.15
Langelier Index @20C		0.49	0.55	0.55

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELL 5 - AFTER PUMPING TEST

SAMPLE DESCRIPTION		MW-1S	MW-1D	MW-2S	MW-2D	MW-3S	MW-3D	MW-4S	MW-4D
DATE SAMPLED		Sept. 1/00	Sept. 1/00	Sept. 1/00	Sept. 1/00	Sept. 1/00	Sept. 1/00	Sept. 1/00	Sept. 1/00
PHILIP LAB NO.		00-A023967	00-A023968	00-A023969	00-A023970	00-A023971	00-A023972	00-A023973	00-A023974
PARAMETER	UNITS								
Aluminum Al	mg/L	0.53	0.26	1.01	0.82	0.13	0.08	0.46	6.22
Barium Ba	mg/L	0.06	< 0.04	0.1	0.06	< 0.04	< 0.04	0.04	0.21
Beryllium Be	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bismuth Bi	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron B	mg/L	0.04	0.04	0.05	0.05	0.04	0.03	0.03	0.47
Cadmium Cd	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Calcium Ca	mg/L	98.2	87.8	90.7	92.3	92	93.6	91.4	196
Chromium Cr	mg/L	< 0.01	0.01	< 0.01	0.01	< 0.01	0.01	< 0.01	0.01
Cobalt Co	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Copper Cu	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	0.01
Iron Fe	mg/L	0.44	1.06	0.77	0.69	0.14	0.19	0.38	6.31
Lead Pb	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.003
Magnesium Mg	mg/L	36.6	32	35.2	34	38.1	38.5	33.9	39.3
Manganese Mn	mg/L	0.02	0.02	0.03	0.07	0.02	0.02	0.02	0.09
Molybdenum Mo	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Nickel Ni	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus as P	mg/L	< 0.02	< 0.02	< 0.02	0.04	< 0.02	< 0.02	< 0.02	0.11
Potassium K	mg/L	3.31	2.07	16.6	26.9	2	2.01	1.53	1.95
Silver Ag	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sodium Na	mg/L	25.9	12.4	39.4	40.1	7.09	7.08	7.68	9.71
Strontium Sr	mg/L	0.31	0.15	0.39	0.47	0.21	1.37	0.22	2.61
Tin Sn	mg/L	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07
Titanium Ti	mg/L	0.02	< 0.02	0.05	0.03	< 0.02	< 0.02	< 0.02	0.12
Vanadium V	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01
Zinc Zn	mg/L	< 0.01	0.14	0.39	0.05	0.03	0.04	0.14	0.05

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELL 5 - AFTER PUMPING TEST

	SAMPLE DESCRIPTION DATE SAMPLED PHILIP LAB NO.	MW-5 Sept. 1/00 00-A023975	MW-6S Sept. 1/00 00-A023976	MW-6D Sept. 1/00 00-A023991	MW-7S Sept. 1/00 00-A023977	MW-7D Sept. 1/00 00-A023978	MW-8S Sept. 1/00 00-A023979	MW-8D Sept. 1/00 00-A023980	MW-9S Sept. 1/00 00-A023981
PARAMETER	UNITS								
Aluminum Al	mg/L	0.49	0.22	0.16	0.51	3.7	0.2	0.23	0.14
Barium Ba	mg/L	0.05	0.04	< 0.04	0.06	0.04	0.04	< 0.04	0.09
Beryllium Be	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bismuth Bi	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron B	mg/L	0.03	0.02	< 0.02	0.04	0.02	0.04	0.03	0.25
Cadmium Cd	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Calcium Ca	mg/L	86.4	102	94.7	88.3	90.5	91.1	88.8	217
Chromium Cr	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cobalt Co	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Copper Cu	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Iron Fe	mg/L	0.46	0.19	0.24	0.44	3.93	0.12	0.33	0.12
Lead Pb	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	0.004	< 0.001	< 0.001	< 0.001
Magnesium Mg	mg/L	30.9	34.4	32	36.9	31.6	42.3	31	114
Manganese Mn	mg/L	0.03	0.03	< 0.02	0.04	0.05	0.02	0.04	0.22
Molybdenum Mo	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Nickel Ni	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus as P	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	0.05	< 0.02	< 0.02	< 0.02
Potassium K	mg/L	1.87	1.48	2.12	2.46	1.15	1.57	1.78	13.4
Silver Ag	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sodium Na	mg/L	40.9	15.2	25.1	13.3	5.31	3.89	6.12	66.2
Strontium Sr	mg/L	0.28	0.19	0.2	0.24	0.2	0.18	0.2	3.21
Tin Sn	mg/L	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07
Titanium Ti	mg/L	< 0.02	< 0.02	< 0.02	0.02	0.07	< 0.02	< 0.02	< 0.02
Vanadium V	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01
Zinc Zn	mg/L	0.15	0.17	0.11	0.12	0.12	0.06	0.09	< 0.01

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELL 5 - AFTER PUMPING TEST

SAMPLE DESCRIPTION DATE SAMPLED PHILIP LAB NO.		MW-9D Sept. 1/00 00-A023982	MW-10S Sept. 1/00 00-A023983	MW-10D Sept. 1/00 00-A023984	MW-11S Sept. 1/00 00-A023985	MW-11D Sept. 1/00 00-A023986	MW-12D Sept. 1/00 00-A023987	DUP-S Sept. 1/00 00-A023989	DUP-D Sept. 1/00 00-A023990
PARAMETER	UNITS								
Aluminum Al	mg/L	2.51	0.31	13.4	0.63	0.29	< 0.03	0.43	0.2
Barium Ba	mg/L	< 0.04	0.07	1.15	< 0.04	0.04	0.07	0.05	< 0.04
Beryllium Be	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bismuth Bi	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron B	mg/L	0.31	0.07	0.1	0.03	0.02	0.07	0.02	< 0.02
Cadmium Cd	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Calcium Ca	mg/L	778	224	309	60.1	92.3	158	113	94.5
Chromium Cr	mg/L	< 0.01	0.01	0.02	0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cobalt Co	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Copper Cu	mg/L	< 0.01	< 0.01	0.02	< 0.01	< 0.01	0.01	< 0.01	< 0.01
Iron Fe	mg/L	2.73	0.29	12.7	0.47	0.19	0.04	0.37	0.34
Lead Pb	mg/L	< 0.001	< 0.001	0.018	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Magnesium Mg	mg/L	59.9	43.5	43.5	22.8	31.7	48.8	39.7	32
Manganese Mn	mg/L	0.09	0.1	0.41	< 0.02	< 0.02	0.24	0.02	< 0.02
Molybdenum Mo	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Nickel Ni	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus as P	mg/L	0.02	< 0.02	0.51	< 0.02	< 0.02	0.2	< 0.02	< 0.02
Potassium K	mg/L	4.09	4	6.71	4.63	2.94	110	3.48	2.11
Silver Ag	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01
Sodium Na	mg/L	8.85	13.1	7.46	25.5	12.1	22.3	22	24.1
Strontium Sr	mg/L	13	2.38	9.56	0.27	1.29	0.5	0.28	0.19
Tin Sn	mg/L	< 0.07	< 0.07	0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07
Titanium Ti	mg/L	0.03	< 0.02	0.38	0.02	< 0.02	< 0.02	< 0.02	< 0.02
Vanadium V	mg/L	< 0.01	< 0.01	0.03	0.01	< 0.01	< 0.01	< 0.01	< 0.01
Zinc Zn	mg/L	0.04	0.11	0.15	0.04	0.12	0.09	0.09	0.14

NOTES:

1. All analyses by Philip Analysis Services Corp. laboratories in London, Ontario.
2. Table to be read in conjunction with accompanying report.

TABLE VII

SUMMARY OF ANALYTICAL RESULTS FOR WELL 5 - PUMPING TEST

Walkerton, Ontario

	SAMPLE DESCRIPTION	WELL 5	WELL 5
	DATE SAMPLED	Aug. 30/00	Sept. 1/00
	TIME SAMPLED	00:20	8:45
	PHILIP LAB NO.	00-A023829	00-A023988
PARAMETER	UNITS		
pH Value	pH units	7.36	7.67
Ammonia as N	mg/L	< 0.05	< 0.05
Nitrogen,T. Kjeldahl as N	mg/L	0.23	0.17
Nitrate as N	mg/L	5.49	6.64
Nitrite as N	mg/L	< 0.02	< 0.02
Nitrate + Nitrite as N	mg/L	5.49	6.64
Carbon, Diss. Org. as C	mg/L	0.9	0.6
Phosphorus,Diss.Orth as P	mg/L	< 0.01	< 0.01
Conductivity	us/cm	613	640
Sulphate as SO4	mg/L	21	27
Alkalinity CaCO3	mg/L	266	271
Chloride as Cl	mg/L	21	27
Colour	TCU	8	< 5
Silica, Reactive as SiO2	mg/L	7.32	7.6
Calculated Hardness CaCO3	mg/L	334	374
Turbidity	NTU	0.23	0.19
Bicarbonate as HCO3	mg/L	265	270
Carbonate CO3	mg/L	1	1
Total Cation	meq/L	7.27	8.27
Total Anions	meq/L	6.74	7.22
Ion Balance	% diff.	3.79	6.77
Calculated T.D.S.	mg/L	362	402
Calculated Conductivity	us/cm	644	721
Saturation pH @4C	pH units	7.52	7.46
Saturation pH @20C	pH units	7.12	7.06
Langelier Index @4C		-0.16	0.21
Langelier Index @20C		0.24	0.61

SUMMARY OF ANALYTICAL RESULTS FOR WELL 5 - PUMPING TEST

	SAMPLE DESCRIPTION	WELL 5	WELL 5
	DATE SAMPLED	Aug. 30/00	Sept. 1/00
	TIME SAMPLED	00:20	8:45
	PHILIP LAB NO.	00-A023829	00-A023988
PARAMETER	UNITS		
Aluminum Al	mg/L	< 0.03	< 0.03
Barium Ba	mg/L	< 0.04	< 0.04
Beryllium Be	mg/L	< 0.01	< 0.01
Bismuth Bi	mg/L	< 0.1	< 0.1
Boron B	mg/L	< 0.02	< 0.02
Cadmium Cd	mg/L	< 0.002	< 0.002
Calcium Ca	mg/L	85.3	97.8
Chromium Cr	mg/L	0.16	< 0.01
Cobalt Co	mg/L	< 0.02	< 0.02
Copper Cu	mg/L	< 0.01	< 0.01
Iron Fe	mg/L	0.65	< 0.02
Lead Pb	mg/L	0.008	< 0.001
Magnesium Mg	mg/L	29.3	31.5
Manganese Mn	mg/L	< 0.02	< 0.02
Molybdenum Mo	mg/L	< 0.02	< 0.02
Nickel Ni	mg/L	0.08	< 0.05
Phosphorus as P	mg/L	< 0.02	< 0.02
Potassium K	mg/L	1.35	1.59
Silver Ag	mg/L	< 0.01	< 0.01
Sodium Na	mg/L	13.1	17.3
Strontium Sr	mg/L	0.22	0.31
Tin Sn	mg/L	< 0.07	< 0.07
Titanium Ti	mg/L	< 0.02	< 0.02
Vanadium V	mg/L	< 0.01	< 0.01
Zinc Zn	mg/L	0.01	0.04

NOTES:
1. All analyses by Philip Analytical Services Corp. laboratories in London, Ontario.
2. Table to be read in conjunction with accompanying report.

TABLE VIII

SUMMARY OF BACTERIOLOGICAL RESULTS FOR WELL 5

Walkerton, Ontario

SAMPLE ID			E. COLI[1]	TOTAL COLIFORM[1]
Well	Date	Time		
5	Aug. 30/00	21:45	<1	1
		21:45 dup	1	2
	Aug. 31/00	02:25	<1	4
		02:25 dup	1	6
		05:10	<1	7
		05:10 dup	<1	5
		08:03	<1	4
		08:03 dup	<1	6
		11:15	<1	8
		11:15 dup	<1	9
		14:00	< 1	8
		14:00 dup	<1	11
		17:15	< 1	9
		17:15 dup	< 1	6
		20:00	<1	2
		20:00 dup	<1	7
		23:45	<1	7
		23:45 dup	<1	8
	Sept. 1/00	02:00	<1	10
		02:00 dup	<1	12
		05:16	<1	15
		05:16 dup	1	4
		08:00	<1	6
		08:00 dup	<1	5
		08:45[2]	1	9
		08:45[2]	20	60

NOTES:
1. All results reported as CFU/100 mL.
2. Analyses by MDS Laboratory Services in London, Ontario.
3. Table to be read in conjunction with accompanying report.

TABLE IX

SUMMARY OF SOIL SAMPLE BACTERIOLOGICAL RESULTS
WELLS 6 AND 7 AREA MONITORING WELLS

Walkerton, Ontario

SAMPLE ID		E. COLI[1]	TOTAL COLIFORM[1]
BH	Sa.		
17D	1A	<10	30
17D	2A	<10	<10
17D	2B	<10	<10
17D	3A	<10	10
18D	1A	<10	<10
18D	1B	<10	10
18D	2	<10	<10
19D	1A	<10	<10
19D	1B	<10	<10
19D	2A	10	30
20D	1A	<10	1600
20D	1B	<10	<10
21	1A	<10	110
21	1B	<10	<10
22	1A	<10	40
22	1B	<10	<10

NOTES:
1. All results reported as CFU/gram.
2. Table to be read in conjunction with accompanying report.

TABLE X

SUMMARY OF DRAWDOWN IN OBSERVATION AND PRIVATE WELLS DURING 48 HOUR PUMPING TEST ON PUMP WELLS 6 AND 7

Walkerton, Ontario

WELL NUMBER	RADIAL DISTANCE FROM WELL 6 (m)	RADIAL DISTANCE FROM WELL 7 (m)	SCREEN INVERVAL (mbgs)	DRAWDOWN AFTER PUMPING WELL 6 FOR 12 HRS. @ 1.26 m^3/min Time (min)	DRAWDOWN AFTER PUMPING WELL 6 FOR 12 HRS. @ 1.26 m^3/min Drawdown (m)	DRAWDOWN AT END OF PUMPING WELL 6 (12-48 HRS. @ 1.26 m^3/min) m^3/min) Time (min)	DRAWDOWN AT END OF PUMPING WELL 6 (12-48 HRS. @ 1.26 m^3/min) m^3/min) Drawdown (m)	TRANSMISSIVITY* (m^2/day)
Well 6	n/a	352	-	705	13.69	2868	16.08	
Well 7	352	n/a	-	n/a	n/a	2106	7.09	
MW-17S	300	60	2.13 - 3.66	728	0.106	2657	0.418	*
MW-17D	300	60	5.94 - 6.55	730	0.116	2828	0.482	
MW-18S	181	183	2.44 - 3.96	739	0.261	2822	0.52	*
MW-18D	181	183	6.07 - 6.68	722	0.327	2820	0.647	
MW-19S	94	414	2.29 - 3.81	605	0.16	2802	0.358	*
MW-19D	92	412	5.49 - 6.10	605	0.163	2800	0.407	
MW-20S	171	184	1.83 - 3.35	735	0.13	2818	0.52	*
MW-20D	173	182	4.72 - 5.49	723	0.165	2818	0.55	
MW-21	308	52	1.83 - 3.35	732	0.02	2832	0.27	
MW-22	65	310	2.29 - 3.81	536	0.035	2813	0.07	
MW-23	433	785	2.29 - 3.81	639	0.08	2810	0.26	
TW 1-82	95	430	-	605	2.28	2849	3.995	338.7
TW 2-82	4	356	-	265	12.1	2840	14.64	
TW 1-86	361	5	-	590	0.06	2835	6.91	440.2
Well 6 Sandpoint	32	350	0 - 0.6	687	0.03	2845	0.03	
Spring Sandpoint	208	146	0 - 0.5	737	0.06	2837	0.455	
[redacted] Well	470	815	-	635	0.21	2814	3.03	342.1
[redacted] Drain	280	635	0.33[2]	642	0.01	2817	> 0.06 (dry)	
[redacted] Well	286	537	-	645	0.59	1305	> 1.4 (dry)	
[redacted] Pond	118	408	0.33[2]	603	0.006	2803	0.104	
[redacted] Well	406	212	-	640	0.28	2827	3.125	246.9
[redacted] Sandpoint	568	275	0.15[2]	633	0.015	2826	0.065	
Bruce Tractor Well	402	311	-	660	0.38	2821	3.4	497.0

NOTES:

1. '*' Response to pumping reflects gradual vertical seepage downwards to the deeper bedrock.
2. Represents initial reading at surface water monitoring station.
3. Table to be read in conjunction with accompanying report.

TABLE XI

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELLS 6 AND 7 - NON-PUMPING CONDITIONS

Walkerton, Ontario

	SAMPLE DESCRIPTION DATE SAMPLED PHILIP LAB NO.	MW-17S Aug. 29/00 00-A023565	MW-17D Aug. 29/00 00-A023566	MW-18S Aug. 29/00 00-A023567	MW-18D Aug. 29/00 00-A023568	MW-19S Aug. 29/00 00-A023569	MW-19D Aug. 29/00 00-A023570	MW-20D Aug. 29/00 00-A023571
PARAMETER	UNITS							
pH Value	pH units	7.42	7.4	7.54	7.58	7.76	7.68	7.53
Ammonia as N	mg/L	< 0.05	< 0.05	0.1	< 0.05	< 0.05	< 0.05	< 0.05
Nitrogen,T. Kjeldahl as N	mg/L	0.2	0.16	0.15	0.11	0.21	0.16	0.22
Nitrate as N	mg/L	3.64	2.31	< 0.1	0.77	< 0.1	< 0.1	4.84
Nitrite as N	mg/L	< 0.02	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Nitrate + Nitrite as N	mg/L	3.64	2.33	< 0.1	0.77	< 0.1	< 0.1	4.84
Carbon, Diss. Org. as C	mg/L	0.7	1.3	1.6	0.5	1.3	1.2	1.1
Phosphorus,Diss.Orth as P	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Conductivity	us/cm	1240	1400	734	627	673	566	1240
Sulphate as SO4	mg/L	20	17	105	47	34	22	37
Alkalinity CaCO3	mg/L	338	332	322	321	295	257	317
Chloride as Cl	mg/L	214	283	11	5	35	34	192
Colour	TCU	< 5	< 5	< 5	< 5	6	6	< 5
Silica, Reactive as SiO2	mg/L	8.47	7.31	11.3	10.3	9.1	8.41	8.98
Calculated Hardness CaCO3	mg/L	429	435	441	394	360	291	448
Turbidity	NTU	31.5	11.1	56.5	40.3	40.1	54.3	32.3
Bicarbonate as HCO3	mg/L	337	331	321	320	293	256	316
Carbonate CO3	mg/L	1	1	1	1	2	1	1
Total Cation	meq/L	14.02	15.48	9.53	8.12	8.41	6.76	14.01
Total Anions	meq/L	13.47	15.14	8.93	7.59	7.59	6.56	12.87
Ion Balance	% diff.	2.01	1.09	3.24	3.35	5.1	1.56	4.24
Calculated T.D.S.	mg/L	737	827	488	399	406	340	723
Calculated Conductivity	us/cm	1486	1711	894	721	771	637	1445
Saturation pH @4C	pH units	7.32	7.32	7.35	7.39	7.47	7.61	7.33
Saturation pH @20C	pH units	6.92	6.92	6.95	6.99	7.07	7.21	6.93
Langelier Index @4C		0.1	0.08	0.19	0.19	0.29	0.07	0.2
Langelier Index @20C		0.5	0.48	0.59	0.59	0.69	0.47	0.6

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELLS 6 AND 7 - NON-PUMPING CONDITIONS

SAMPLE DESCRIPTION		MW-20S	MW-22
DATE SAMPLED		Aug. 29/00	Aug. 29/00
PHILIP LAB NO.		00-A023572	00-A023573
PARAMETER	**UNITS**		
pH Value	pH units	7.48	7.5
Ammonia as N	mg/L	< 0.05	< 0.05
Nitrogen,T. Kjeldahl as N	mg/L	0.18	0.28
Nitrate as N	mg/L	5.3	0.15
Nitrite as N	mg/L	< 0.02	< 0.02
Nitrate + Nitrite as N	mg/L	5.3	0.15
Carbon, Diss. Org. as C	mg/L	1.3	3.1
Phosphorus,Diss.Orth as P	mg/L	< 0.01	< 0.01
Conductivity	us/cm	1220	865
Sulphate as SO4	mg/L	33	37
Alkalinity CaCO3	mg/L	319	398
Chloride as Cl	mg/L	217	55
Colour	TCU	< 5	< 5
Silica, Reactive as SiO2	mg/L	7.59	7.68
Calculated Hardness CaCO3	mg/L	463	406
Turbidity	NTU	28.2	30.6
Bicarbonate as HCO3	mg/L	318	397
Carbonate CO3	mg/L	1	1
Total Cation	meq/L	13.95	11
Total Anions	meq/L	13.56	10.29
Ion Balance	% diff.	1.42	3.35
Calculated T.D.S.	mg/L	743	550
Calculated Conductivity	us/cm	1499	1028
Saturation pH @4C	pH units	7.31	7.24
Saturation pH @20C	pH units	6.91	6.84
Langelier Index @4C		0.17	0.26
Langelier Index @20C		0.57	0.66

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELLS 6 AND 7 - NON-PUMPING CONDITIONS

SAMPLE DESCRIPTION		MW-17S	MW-17D	MW-18S	MW-18D	MW-19S	MW-19D	MW-20D
DATE SAMPLED		Aug. 29/00	Aug. 29/00	Aug. 29/00	Aug. 29/00	Aug. 29/00	Aug. 29/00	Aug. 29/00
PHILIP LAB NO.		00-A023565	00-A023566	00-A023567	00-A023568	00-A023569	00-A023570	00-A023571
PARAMETER	**UNITS**							
Aluminum Al	mg/L	0.14	0.07	0.22	0.27	0.43	0.15	0.13
Barium Ba	mg/L	0.08	0.07	0.07	< 0.04	0.04	0.04	0.09
Beryllium Be	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bismuth Bi	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron B	mg/L	0.03	1.24	0.03	< 0.02	0.03	0.02	0.02
Cadmium Cd	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Calcium Ca	mg/L	114	119	108	97.3	87.6	71.5	119
Chromium Cr	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cobalt Co	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Copper Cu	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	0.01
Iron Fe	mg/L	0.16	< 0.02	0.16	0.09	0.4	0.06	0.13
Lead Pb	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Magnesium Mg	mg/L	35.1	33.5	41.5	36.8	34.3	27.3	36.6
Manganese Mn	mg/L	< 0.02	< 0.02	0.03	< 0.02	< 0.02	< 0.02	< 0.02
Molybdenum Mo	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Nickel Ni	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus as P	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Potassium K	mg/L	3.74	4.86	2.14	2.27	1.98	1.75	3.88
Silver Ag	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sodium Na	mg/L	123	153	15.3	4.08	26.8	20.8	114
Strontium Sr	mg/L	0.34	0.33	1.74	1.21	0.47	0.54	0.52
Tin Sn	mg/L	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07
Titanium Ti	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	0.02	< 0.02	< 0.02
Vanadium V	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01
Zinc Zn	mg/L	0.09	0.06	0.06	0.06	0.18	0.08	0.12

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELLS 6 AND 7 - NON-PUMPING CONDITIONS

	SAMPLE DESCRIPTION	MW-20S	MW-22
	DATE SAMPLED	Aug. 29/00	Aug. 29/00
	PHILIP LAB NO.	00-A023572	00-A023573
PARAMETER	UNITS		
Aluminum Al	mg/L	0.09	0.43
Barium Ba	mg/L	0.09	0.06
Beryllium Be	mg/L	< 0.01	< 0.01
Bismuth Bi	mg/L	< 0.1	< 0.1
Boron B	mg/L	0.02	0.02
Cadmium Cd	mg/L	< 0.002	< 0.002
Calcium Ca	mg/L	124	114
Chromium Cr	mg/L	< 0.01	0.01
Cobalt Co	mg/L	< 0.02	< 0.02
Copper Cu	mg/L	< 0.01	0.01
Iron Fe	mg/L	< 0.02	0.38
Lead Pb	mg/L	< 0.001	< 0.001
Magnesium Mg	mg/L	37.3	29.5
Manganese Mn	mg/L	< 0.02	0.03
Molybdenum Mo	mg/L	< 0.02	< 0.02
Nickel Ni	mg/L	< 0.05	< 0.05
Phosphorus as P	mg/L	< 0.02	< 0.02
Potassium K	mg/L	3.33	2.51
Silver Ag	mg/L	< 0.01	< 0.01
Sodium Na	mg/L	106	64.9
Strontium Sr	mg/L	0.65	0.2
Tin Sn	mg/L	< 0.07	< 0.07
Titanium Ti	mg/L	< 0.02	0.02
Vanadium V	mg/L	< 0.01	0.01
Zinc Zn	mg/L	0.11	0.18

NOTES:

1. All analyses by Philip Analytical Services Corp. laboratories in London, Ontario.
2. Table to be read in conjunction with accompanying report.

TABLE XII

SUMMARY OF BACTERIOLOGICAL RESULTS
WELL 6 AND 7 AREA MONITORING WELLS

Walkerton, Ontario

	NON-PUMPING CONDITIONS					AFTER PUMPING TEST				
	Total Coliforms[1]		E. coli[1]		0157-H7	Total Coliforms[1]		E. coli[1]		0157-H7
SAMPLE ID	MDS[2]	MOH[3]	MDS	MOH	MOH	MDS	MOH	MDS	MOH	MOH
MW-17S	<10	9300	<10	<10	ND	100	9000	<10	<10	ND
MW-17D	<1	2500	<1	<10	ND	<1	10	<1	<10	ND
MW-18S	<10	46000	<10	<10	ND	<1	110	<1	<10	ND
MW-18D	<1	>8000	<1	<10	ND	<100	30000	<10	<10	ND
MW-19S	<10	<10	<10	<10	ND	<100	500	<10	<10	ND
MW-19D	<2	1700	<2	<10	ND	500	400	<10	<10	ND
MW-20S	<4	800	<4	<10	ND	<10	1700	<1	<10	ND
MW-20D	<2	350	<2	0	ND	<10	4400	<1	<10	ND
MW-21	-	-	-	-	-	<100	-	<10	-	ND
MW-22	<10	2400	<10	<10	ND	<100	5000	<100	<10	ND

NOTES:

1. All results reported as CFU/100 mL.
2. Analyses by MDS Laboratory Services.
3. Analyses by Ontario Ministry of Health Laboratories Branch.
4. ND - Not detected
5. Table to be read in conjunction with accompanying report.

TABLE XIII

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELLS 6 AND 7 - AFTER PUMPING TEST

Walkerton, Ontario

SAMPLE DESCRIPTION		MW-17S	MW-17D	MW-18S	MW-18D	MW-19S	MW-19D	MW-20S
DATE SAMPLED		Sept. 7/00	Sept. 7/00	Sept. 7/00	Sept. 7/00	Sept. 7/00	Sept. 7/00	Sept. 7/00
PHILIP LAB NO.		00-A024513	00-A024514	00-A024515	00-A024516	00-A024517	00-A024518	00-A024519
PARAMETER	UNITS							
pH Value	pH units	7.49	7.48	7.62	7.6	7.81	7.77	7.56
Ammonia as N	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrogen,T. Kjeldahl as N	mg/L	0.19	0.19	0.27	0.19	< 0.05	0.41	0.27
Nitrate as N	mg/L	4.25	3.31	2.14	0.11	0.2	< 0.1	6.76
Nitrite as N	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Nitrate + Nitrite as N	mg/L	4.25	3.31	2.14	0.11	0.2	< 0.1	6.76
Carbon, Diss. Org. as C	mg/L	0.9	0.9	< 0.5	1	1.2	1.5	1.1
Phosphorus,Diss.Orth as P	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Conductivity	us/cm	1230	1370	622	686	676	678	1260
Sulphate as SO4	mg/L	18	13	52	98	44	44	33
Alkalinity CaCO3	mg/L	300	320	328	300	295	292	308
Chloride as Cl	mg/L	227	270	4	9	49	62	235
Colour	TCU	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Silica, Reactive as SiO2	mg/L	7.9	7.01	9.41	11	9.81	8.64	8.15
Calculated Hardness CaCO3	mg/L	414	438	381	399	337	327	432
Turbidity	NTU	21.4	3.68	12	16	20	8.88	15
Bicarbonate as HCO3	mg/L	299	319	327	299	293	290	307
Carbonate CO3	mg/L	1	1	1	1	2	2	1
Total Cation	meq/L	13.62	15.14	7.77	8.53	8.08	7.95	13.64
Total Anions	meq/L	13.08	14.52	7.91	8.3	8.21	8.5	13.96
Ion Balance	% diff.	2.03	2.08	0.87	1.34	0.79	3.34	1.14
Calculated T.D.S.	mg/L	720	799	405	447	426	435	758
Calculated Conductivity	us/cm	1472	1652	715	815	810	822	1519
Saturation pH @4C	pH units	7.39	7.33	7.39	7.42	7.51	7.51	7.36
Saturation pH @20C	pH units	6.99	6.93	6.99	7.02	7.11	7.11	6.96
Langelier Index @4C		0.1	0.15	0.23	0.18	0.3	0.26	0.2
Langelier Index @20C		0.5	0.55	0.63	0.58	0.7	0.66	0.6

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELLS 6 AND 7 - AFTER PUMPING TEST

	SAMPLE DESCRIPTION	MW-20D	MW-21	MW-22	WELL 6	WELL 7
	DATE SAMPLED	Sept. 7/00	Sept. 7/00	Sept. 7/00	Sept. 6/00	Sept. 6/00
	PHILIP LAB NO.	00-A024520	00-A024521	00-A024522	00-A024524	00-A024523
PARAMETER	UNITS					
pH Value	pH units	7.59	9.35	7.56	7.68	7.67
Ammonia as N	mg/L	0.08	0.96	< 0.05	< 0.05	< 0.05
Nitrogen,T. Kjeldahl as N	mg/L	0.27	1.95	0.42	0.19	0.12
Nitrate as N	mg/L	7.04	0.23	0.57	1.2	4.53
Nitrite as N	mg/L	< 0.02	0.21	< 0.02	< 0.02	< 0.02
Nitrate + Nitrite as N	mg/L	7.04	0.44	0.57	1.2	4.53
Carbon, Diss. Org. as C	mg/L	0.9	10.9	3.2	< 0.5	0.9
Phosphorus,Diss.Orth as P	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Conductivity	us/cm	1290	943	857	718	719
Sulphate as SO4	mg/L	33	110	40	169	49
Alkalinity CaCO3	mg/L	310	105	405	255	305
Chloride as Cl	mg/L	250	166	67	11	56
Colour	TCU	< 5	14	< 5	< 5	< 5
Silica, Reactive as SiO2	mg/L	7.47	17.7	7.78	7.38	7.75
Calculated Hardness CaCO3	mg/L	447	38.8	381	424	371
Turbidity	NTU	18.5	20	17.1	< 0.1	0.24
Bicarbonate as HCO3	mg/L	309	86	404	254	304
Carbonate CO3	mg/L	1	18	1	1	1
Total Cation	meq/L	14.34	9.49	10.35	8.73	8.53
Total Anions	meq/L	14.44	9.1	10.86	9.01	9.02
Ion Balance	% diff.	0.34	2.08	2.44	1.56	2.81
Calculated T.D.S.	mg/L	789	576	559	502	470
Calculated Conductivity	us/cm	1592	1134	1030	911	860
Saturation pH @4C	pH units	7.34	9.01	7.26	7.41	7.42
Saturation pH @20C	pH units	6.94	8.61	6.86	7.01	7.02
Langelier Index @4C		0.25	0.34	0.3	0.27	0.25
Langelier Index @20C		0.65	0.74	0.7	0.67	0.65

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELLS 6 AND 7 - AFTER PUMPING TEST

SAMPLE DESCRIPTION		MW-17S	MW-17D	MW-18S	MW-18D	MW-19S	MW-19D	MW-20S	MW-20D
DATE SAMPLED		Sept. 7/00	Sept. 7/00	Sept. 7/00	Sept. 7/00	Sept. 7/00	Sept. 7/00	Sept. 7/00	Sept. 7/00
PHILIP LAB NO.		00-A024513	00-A024514	00-A024515	00-A024516	00-A024517	00-A024518	00-A024519	00-A024520
PARAMETER	UNITS								
Aluminum Al	mg/L	0.62	< 0.03	< 0.03	0.38	1.14	< 0.03	< 0.03	< 0.03
Barium Ba	mg/L	0.08	0.07	< 0.04	0.06	0.05	0.05	0.09	0.09
Beryllium Be	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bismuth Bi	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron B	mg/L	0.05	0.37	0.02	0.04	0.05	0.03	0.03	0.02
Cadmium Cd	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.002	< 0.002	< 0.002
Calcium Ca	mg/L	111	121	94.4	97.2	81	80.6	116	120
Chromium Cr	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Cobalt Co	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Copper Cu	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01
Iron Fe	mg/L	0.48	< 0.02	< 0.02	0.33	0.86	< 0.02	< 0.02	< 0.02
Lead Pb	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Magnesium Mg	mg/L	33.2	33	35.3	38	32.6	30.6	34.5	35.9
Manganese Mn	mg/L	< 0.02	< 0.02	< 0.02	0.03	0.11	< 0.02	< 0.02	< 0.02
Molybdenum Mo	mg/L	0.03	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Nickel Ni	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus as P	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Potassium K	mg/L	3.37	3.03	1.17	1.84	2.03	1.68	3.81	3.36
Silver Ag	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Sodium Na	mg/L	121	145	2.86	11.5	30	31.5	113	122
Strontium Sr	mg/L	0.3	0.3	1.05	1.7	0.49	0.66	0.53	0.64
Tin Sn	mg/L	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07
Titanium Ti	mg/L	0.03	< 0.02	< 0.02	< 0.02	0.05	< 0.02	< 0.02	< 0.02
Vanadium V	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Zinc Zn	mg/L	0.01	0.03	0.12	0.07	0.21	0.05	0.03	0.01

SUMMARY OF ANALYTICAL RESULTS FOR AREA OF WELLS 6 AND 7 - AFTER PUMPING TEST

SAMPLE DESCRIPTION		MW-21	MW-22	WELL 6	WELL 7
DATE SAMPLED		Sept. 7/00	Sept. 7/00	Sept. 6/00	Sept. 6/00
PHILIP LAB NO.		00-A024521	00-A024522	00-A024524	00-A024523
PARAMETER	UNITS				
Aluminum Al	mg/L	0.56	< 0.03	< 0.03	< 0.03
Barium Ba	mg/L	< 0.04	0.06	0.1	0.08
Beryllium Be	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Bismuth Bi	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Boron B	mg/L	0.15	0.02	0.02	< 0.02
Cadmium Cd	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
Calcium Ca	mg/L	7.3	107	118	96.1
Chromium Cr	mg/L	< 0.01	0.01	< 0.01	< 0.01
Cobalt Co	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Copper Cu	mg/L	0.01	< 0.01	< 0.01	< 0.01
Iron Fe	mg/L	0.49	< 0.02	< 0.02	< 0.02
Lead Pb	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Magnesium Mg	mg/L	5	27.6	31.5	31.9
Manganese Mn	mg/L	< 0.02	0.02	< 0.02	< 0.02
Molybdenum Mo	mg/L	0.07	< 0.02	< 0.02	< 0.02
Nickel Ni	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Phosphorus as P	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Potassium K	mg/L	11.4	2.32	1.04	1.47
Silver Ag	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Sodium Na	mg/L	192	61.5	5.21	24.6
Strontium Sr	mg/L	0.07	0.17	12.4	2.53
Tin Sn	mg/L	< 0.07	< 0.07	< 0.07	< 0.07
Titanium Ti	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Vanadium V	mg/L	0.04	< 0.01	< 0.01	< 0.01
Zinc Zn	mg/L	0.04	0.02	0.06	0.09

NOTES:

1. All analyses by Philip Analytical Services Corp. laboratories of London, Ontario.
2. Table to be read in conjunction with accompanying report.

TABLE XIV

SUMMARY OF ANALYTICAL RESULTS FOR WELLS 6 AND 7 - PUMPING TEST

Walkerton, Ontario

SAMPLE DESCRIPTION		Well 6 1 min.	Well 6 4 min.	Well 6 Sept. 4	Well 7 Sept. 5	[redacted] Pond
DATE SAMPLED		Sept. 4/00	Sept. 4/00	Sept. 4/00	Sept. 5/00	Sept. 6/00
TIME SAMPLED				20:20	08:20	
PHILIP LAB NO.		00-A024057	00-A024058	00-A024059	00-A024060	00-A024259
PARAMETER	UNITS					
pH Value	pH units			7.48	7.59	8.42
Ammonia as N	mg/L			< 0.05	< 0.05	0.45
Nitrogen,T. Kjeldahl as N	mg/L			0.06	< 0.05	0.73
Nitrate as N	mg/L			3.77	0.51	< 0.1
Nitrite as N	mg/L			< 0.02	< 0.02	< 0.02
Nitrate + Nitrite as N	mg/L			3.77	0.51	< 0.1
Carbon, Diss. Org. as C	mg/L			0.8	< 0.5	3.9
Phosphorus,Diss.Orth as P	mg/L			< 0.01	< 0.01	< 0.01
Conductivity	us/cm			698	666	353
Sulphate as SO4	mg/L			45	116	22
Alkalinity CaCO3	mg/L			280	247	141
Chloride as Cl	mg/L			41	10	19
Colour	TCU			< 5	< 5	8
Silica, Reactive as SiO2	mg/L			6.98	6.44	2.11
Calculated Hardness CaCO3	mg/L			388	400	193
Turbidity	NTU	8.21	4.23	1	0.12	2.34
Bicarbonate as HCO3	mg/L			279	246	137
Carbonate CO3	mg/L			1	1	3
Total Cation	meq/L			8.59	8.22	4.42
Total Anions	meq/L			7.96	7.67	3.81
Ion Balance	% diff.			3.81	3.46	7.37
Calculated T.D.S.	mg/L			431	428	200
Calculated Conductivity	us/cm			801	793	401
Saturation pH @4C	pH units			7.44	7.46	8.23
Saturation pH @20C	pH units			7.04	7.06	7.83
Langelier Index @4C				0.04	0.13	0.19
Langelier Index @20C				0.44	0.53	0.59

SUMMARY OF ANALYTICAL RESULTS FOR WELLS 6 AND 7 - PUMPING TEST

SAMPLE DESCRIPTION		Well 6	Well 7
DATE SAMPLED		Sept. 6/00	Sept. 6/00
TIME SAMPLED		19:45	19:45
PHILIP LAB NO.		00-A024524	00-A024523
PARAMETER	UNITS		
pH Value	pH units	7.68	7.67
Ammonia as N	mg/L	< 0.05	< 0.05
Nitrogen,T. Kjeldahl as N	mg/L	0.19	0.12
Nitrate as N	mg/L	1.2	4.53
Nitrite as N	mg/L	< 0.02	< 0.02
Nitrate + Nitrite as N	mg/L	1.2	4.53
Carbon, Diss. Org. as C	mg/L	< 0.5	0.9
Phosphorus,Diss.Orth as P	mg/L	< 0.01	< 0.01
Conductivity	us/cm	718	719
Sulphate as SO4	mg/L	169	49
Alkalinity CaCO3	mg/L	255	305
Chloride as Cl	mg/L	11	56
Colour	TCU	< 5	< 5
Silica, Reactive as SiO2	mg/L	7.38	7.75
Calculated Hardness CaCO3	mg/L	424	371
Turbidity	NTU	< 0.1	0.24
Bicarbonate as HCO3	mg/L	254	304
Carbonate CO3	mg/L	1	1
Total Cation	meq/L	8.73	8.53
Total Anions	meq/L	9.01	9.02
Ion Balance	% diff.	1.56	2.81
Calculated T.D.S.	mg/L	502	470
Calculated Conductivity	us/cm	911	860
Saturation pH @4C	pH units	7.41	7.42
Saturation pH @20C	pH units	7.01	7.02
Langelier Index @4C		0.27	0.25
Langelier Index @20C		0.67	0.65

SUMMARY OF ANALYTICAL RESULTS FOR WELLS 6 AND 7 - PUMPING TEST

	SAMPLE DESCRIPTION	Well 6 1 min.	Well 6 4 min.	Well 6 Sept. 4	Well 7 Sept. 5	[redacted] Pond
	DATE SAMPLED	Sept. 4/00	Sept. 4/00	Sept. 4/00	Sept. 5/000	Sept. 6/00
	TIME SAMPLED			20:20	08:20	
	PHILIP LAB NO.	00-A024057	00-A024058	00-A024059	00-A024060	00-A024259
PARAMETER	UNITS					
Aluminum Al	mg/L			< 0.03	< 0.03	0.13
Barium Ba	mg/L			0.09	0.12	< 0.04
Beryllium Be	mg/L			< 0.01	< 0.01	< 0.01
Bismuth Bi	mg/L			< 0.1	< 0.1	< 0.1
Boron B	mg/L			0.02	< 0.02	0.03
Cadmium Cd	mg/L			< 0.002	< 0.002	< 0.002
Calcium Ca	mg/L			99.2	107	30
Chromium Cr	mg/L			< 0.01	< 0.01	< 0.01
Cobalt Co	mg/L			< 0.02	< 0.02	< 0.02
Copper Cu	mg/L			0.01	< 0.01	< 0.01
Iron Fe	mg/L			0.04	< 0.02	0.18
Lead Pb	mg/L			< 0.001	< 0.001	< 0.001
Magnesium Mg	mg/L			34	32.2	28.7
Manganese Mn	mg/L			< 0.02	< 0.02	< 0.02
Molybdenum Mo	mg/L			< 0.02	< 0.02	< 0.02
Nickel Ni	mg/L			< 0.05	< 0.05	< 0.05
Phosphorus as P	mg/L			< 0.02	< 0.02	< 0.02
Potassium K	mg/L			1.35	0.9	1.11
Silver Ag	mg/L			< 0.01	< 0.01	< 0.01
Sodium Na	mg/L			18.6	4.8	11.5
Strontium Sr	mg/L			2.64	12.9	0.18
Tin Sn	mg/L			< 0.07	< 0.07	< 0.07
Titanium Ti	mg/L			< 0.02	< 0.02	< 0.02
Vanadium V	mg/L			< 0.01	< 0.01	< 0.01
Zinc Zn	mg/L			0.11	0.05	< 0.01

SUMMARY OF ANALYTICAL RESULTS FOR WELLS 6 AND 7 - PUMPING TEST

SAMPLE DESCRIPTION		Well 6	Well 7
DATE SAMPLED		Sept. 6/00	Sept. 6/00
TIME SAMPLED		19:45	19:45
PHILIP LAB NO.		00-A024524	00-A024523
PARAMETER	UNITS		
Aluminum Al	mg/L	< 0.03	< 0.03
Barium Ba	mg/L	0.1	0.08
Beryllium Be	mg/L	< 0.01	< 0.01
Bismuth Bi	mg/L	< 0.1	< 0.1
Boron B	mg/L	0.02	< 0.02
Cadmium Cd	mg/L	< 0.002	< 0.002
Calcium Ca	mg/L	118	96.1
Chromium Cr	mg/L	< 0.01	< 0.01
Cobalt Co	mg/L	< 0.02	< 0.02
Copper Cu	mg/L	< 0.01	< 0.01
Iron Fe	mg/L	< 0.02	< 0.02
Lead Pb	mg/L	< 0.001	< 0.001
Magnesium Mg	mg/L	31.5	31.9
Manganese Mn	mg/L	< 0.02	< 0.02
Molybdenum Mo	mg/L	< 0.02	< 0.02
Nickel Ni	mg/L	< 0.05	< 0.05
Phosphorus as P	mg/L	< 0.02	< 0.02
Potassium K	mg/L	1.04	1.47
Silver Ag	mg/L	< 0.01	< 0.01
Sodium Na	mg/L	5.21	24.6
Strontium Sr	mg/L	12.4	2.53
Tin Sn	mg/L	< 0.07	< 0.07
Titanium Ti	mg/L	< 0.02	< 0.02
Vanadium V	mg/L	< 0.01	< 0.01
Zinc Zn	mg/L	0.06	0.09

NOTES:

1. All analyses by Philip Analytical Services Corp. laboratories in London, Ontario.
2. Table to be read in conjunction with accompanying report.

TABLE XV

SUMMARY OF BACTERIOLOGICAL RESULTS FOR WELLS 6 AND 7

Walkerton, Ontario

SAMPLE ID			E. COLI[1]	TOTAL COLIFORM[1]	SAMPLE ID			E. COLI[1]	TOTAL COLIFORM[1]
Well	Date	Time			Well	Date	Time		
6	Sept. 4/00	1 min	<1	4	7	Sept.5/00	8:20	<1	<1
		4min	<1	12			13:20	<1	<1
		20:20	<1	<1			15:50	<1	<1
		23:35	<1	<1			18:15	<1	<1
	Sept. 5/00	02:30	<1	26			20:20	<1	<1
		05:35	<1	2			23:00	<1	<1
		08:27	<1	<1		Sept. 6/00	01:58	<1	<1
		13:00	<1	<1			04:55	<1	<1
		15:40	<1	<1			08:00	<1	<1
		18:10	<1	3			11:00	<1	<1
		20:15	<1	5			13:45	<1	<1
		23:00	<1	5			16:55	<1	<1
	Sept. 6/00	01:54	<1	2			19:45	<1	<1
		04:55	<1	1			19:45[2]	0	0
		08:00	<1	<1					
		11:00	<1	1					
		13:45	<1	<1					
		16:45	<1	2					
		19:45	<1	<1					
		19:45[2]	0	1					

NOTES:

1. All results reported as CFU/100 mL.
2. Analyses by MDS Laboratory Services in London, Ontario.
3. Table to be read in conjunction with accompanying report.

TABLE XVI

COMPARATIVE SUMMARY OF TOTAL AEROBIC SPOREFORMER RESULTS

Walkerton, Ontario

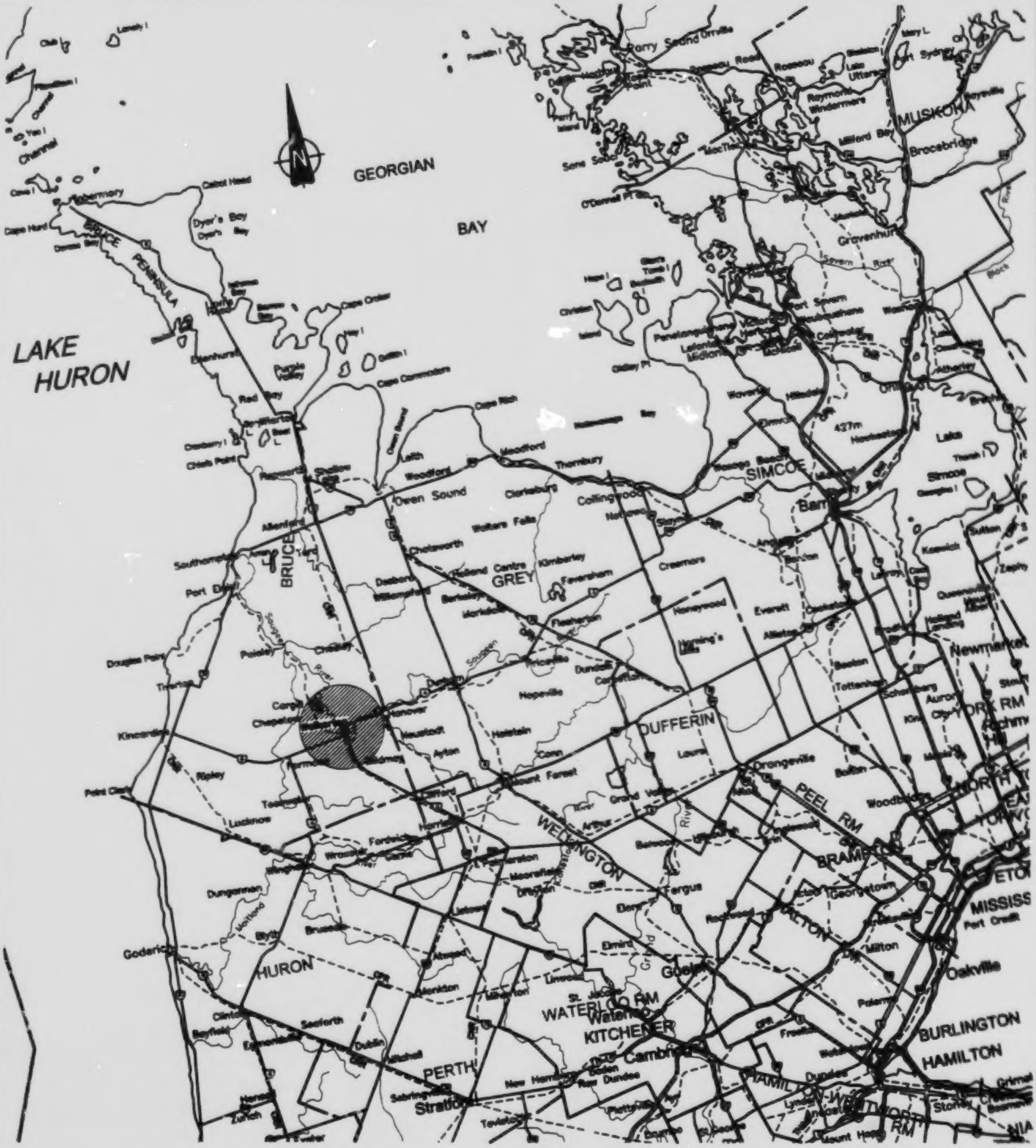
SAMPLE ID			TOTAL AEROBIC SPOREFORMERS/500 mL
Well	Date	Time	
6	Sept. 4/00	20:20	2
		23:35	2
	Sept. 5/00	02:30	1
		05:35	0
		08:27	2
		13:00	1
		15:40	0
		18:10	1
		20:15	1
		23:00	3
	Sept. 6/00	01:54	2
		04:55	0
		11:00	0
		13:45	2
		16:45	0
		19:45	1
7	Sept.5/00	13:20	0
		15:50	1
		18:15	0
		20:20	0
		23:00	0
	Sept. 6/00	01:58	0
		08:00	0
		11:00	0
		13:40	0
		16:35	1
		19:45	0

SAMPLE ID	TOTAL AEROBIC SPOREFORMERS/500 mL	
MW	Static Conditions	After Pumping Test
17S	250	4000
17D	1150	400
18S	1650	50
18D	100	23000
19S	450	1900
19D	700	150
20S	500	1250
20D	1200	4200
22	2950	7650

NOTES: 1. Table to be read in conjunction with accompanying report.

LOCATION MAP

FIGURE 1


GEORGIAN
BAY
LAKE HURON
BRUCE PENINSULA
Tobermory
BRUCE
GREY
SIMCOE
DUFFERIN
WELLINGTON
HURON
PERTH
WATERLOO RM
KITCHENER
PEEL RM
YORK RM
MUSKOKA
Owen Sound
Collingwood
Barrie
Southampton
Port Elgin
Kincardine
Walkerton
Hanover
Mount Forest
Orangeville
Newmarket
Goderich
Guelph
Cambridge
Stratford
Brampton
Georgetown
Milton
Oakville
Mississauga
BURLINGTON
HAMILTON
Bracebridge
Gravenhurst
Lake Simcoe
Wingham
Clinton
Seaforth
Bayfield

Date AUG. 15, 2000

Project 001-3105-1

Golder Associates
LONDON, ONTARIO, CANADA

Drawn WDF

Chkd DB

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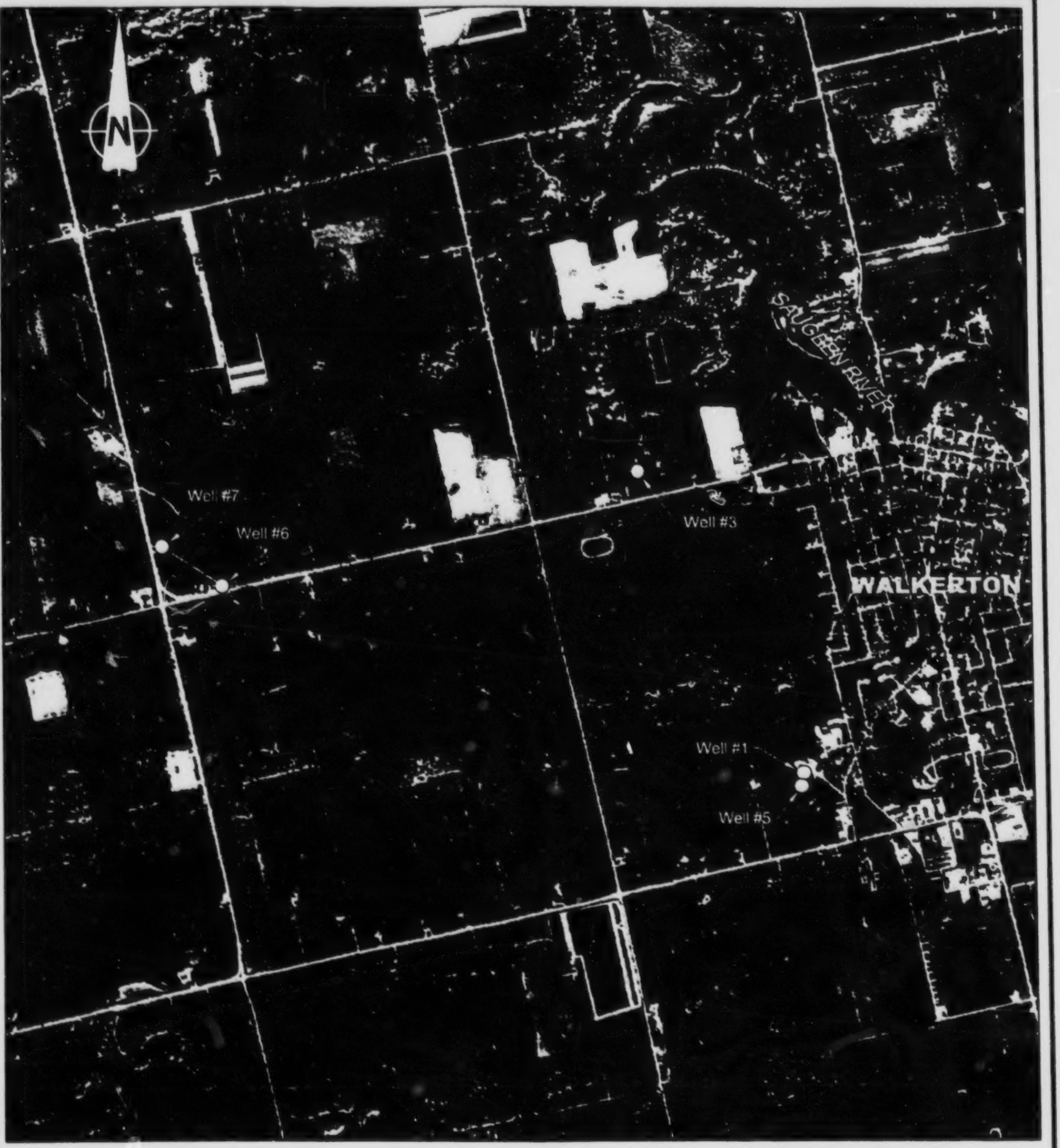
SITE LOCATION MAP

FIGURE 2


N
SAUGEEN RIVER
Well #7
Well #6
Well #3
WALKERTON
Well #1
Well #5

SCALE 1:30,000 (Approximate)

Golder Associates
LONDON, ONTARIO, CANADA

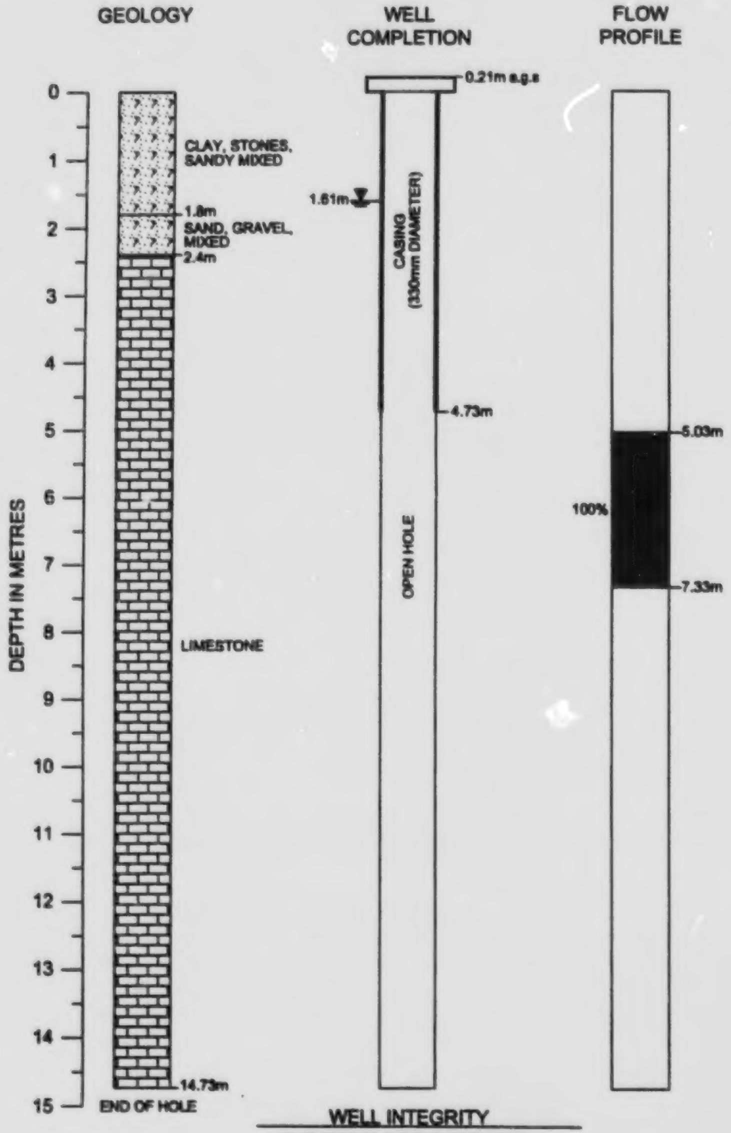
Date SEPT. 17, 2000
Project 001-3105

Drawn WDF
Chkd DB

C:\PROJECTS\00_DRFTG\001-3105.-1\003105-1-02.DWG WDF 09/17/00 23:20

WELL No. 5 SUMMARY LOG

FIGURE 3


GEOLOGY
WELL COMPLETION
FLOW PROFILE
DEPTH IN METRES
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
CLAY, STONES, SANDY MIXED
1.8m
SAND, GRAVEL, MIXED
2.4m
LIMESTONE
14.73m
END OF HOLE
0.21m a.g.s
1.61m
CASING (330mm DIAMETER)
4.73m
OPEN HOLE
5.03m
100%
7.33m

WELL INTEGRITY

THE BOND LOG INDICATES A MODERATE TO GOOD CEMENT BOND THROUGHOUT THE CASING

NOTES

1. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING REPORT.
2. GEOLOGIC DESCRIPTIONS AND DEPTHS TAKEN FROM MOE WATER WELL RECORDS.
3. WATER LEVEL MEASURED AUG. 30, 2000

Date SEPT. 17, 2000

Project 001-3105-1

Golder Associates

LONDON, ONTARIO, CANADA

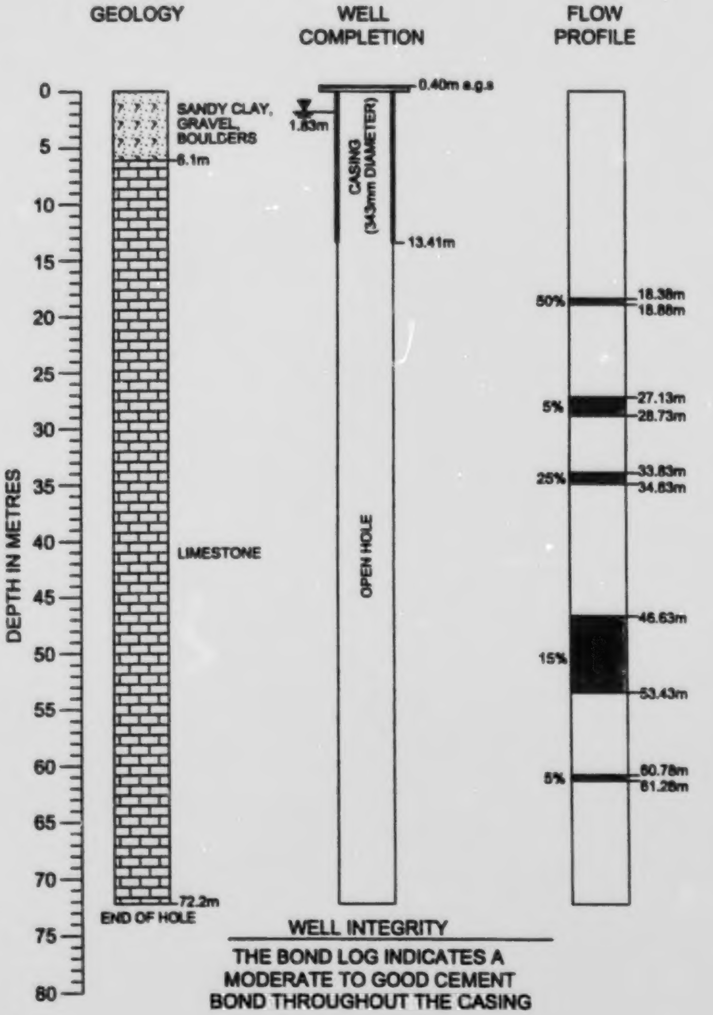
Drawn KD/WDF

Chkd DB

C:\PROJECTS\00_DRFTG\001-3105.-1\003105-1-03.DWG WDF 09/17/00 23:36

WELL No. 6 SUMMARY LOG

FIGURE 4


GEOLOGY
WELL COMPLETION
FLOW PROFILE
DEPTH IN METRES
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
SANDY CLAY, GRAVEL, BOULDERS
6.1m
LIMESTONE
72.2m
END OF HOLE
0.40m a.g.s
1.83m
CASING (343mm DIAMETER)
13.41m
OPEN HOLE
50%
18.38m
18.88m
5%
27.13m
28.73m
25%
33.83m
34.83m
15%
46.63m
53.43m
5%
60.78m
61.28m

WELL INTEGRITY

THE BOND LOG INDICATES A
MODERATE TO GOOD CEMENT
BOND THROUGHOUT THE CASING

NOTES

1. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING REPORT.
2. GEOLOGIC DESCRIPTIONS AND DEPTHS TAKEN FROM MOE WATER WELL RECORDS.
3. WATER LEVEL MEASURED SEPT. 4, 2000.

Date SEPT. 17, 2000
Project 001-3105-1

Golder Associates
LONDON, ONTARIO, CANADA

Drawn KD/WDF
Chkd DB

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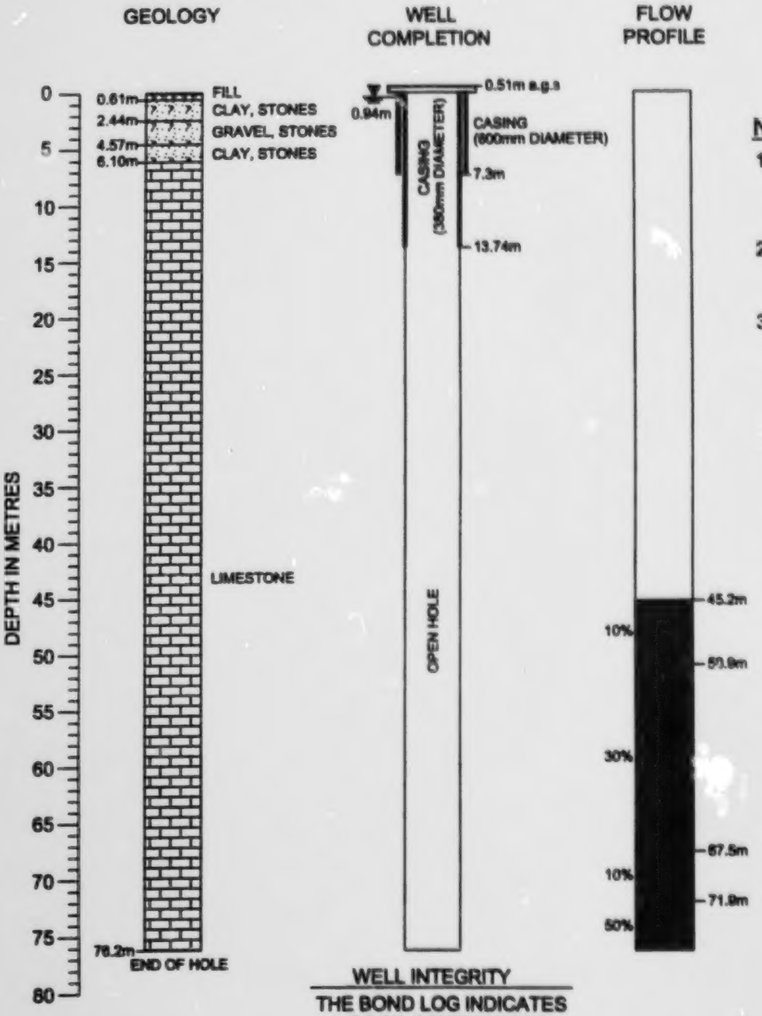
WELL No. 7 SUMMARY LOG

FIGURE 5


GEOLOGY
WELL COMPLETION
FLOW PROFILE
DEPTH IN METRES
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
0.61m
2.44m
4.57m
6.10m
FILL
CLAY, STONES
GRAVEL, STONES
CLAY, STONES
LIMESTONE
76.2m
END OF HOLE
0.51m a.g.s
0.94m
CASING (350mm DIAMETER)
CASING (600mm DIAMETER)
7.3m
13.74m
OPEN HOLE
45.2m
10%
50.9m
30%
67.5m
10%
71.9m
50%

WELL INTEGRITY

THE BOND LOG INDICATES
A GOOD CEMENT BOND
THROUGHOUT THE CASING

NOTES

1. THIS FIGURE IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING REPORT.
2. GEOLOGIC DESCRIPTIONS AND DEPTHS TAKEN FROM MOE WATER WELL RECORDS.
3. WATER LEVEL MEASURED SEPT. 5, 2000.

Date SEPT. 17, 2000

Project 001-3105-1

Golder Associates
LONDON, ONTARIO, CANADA

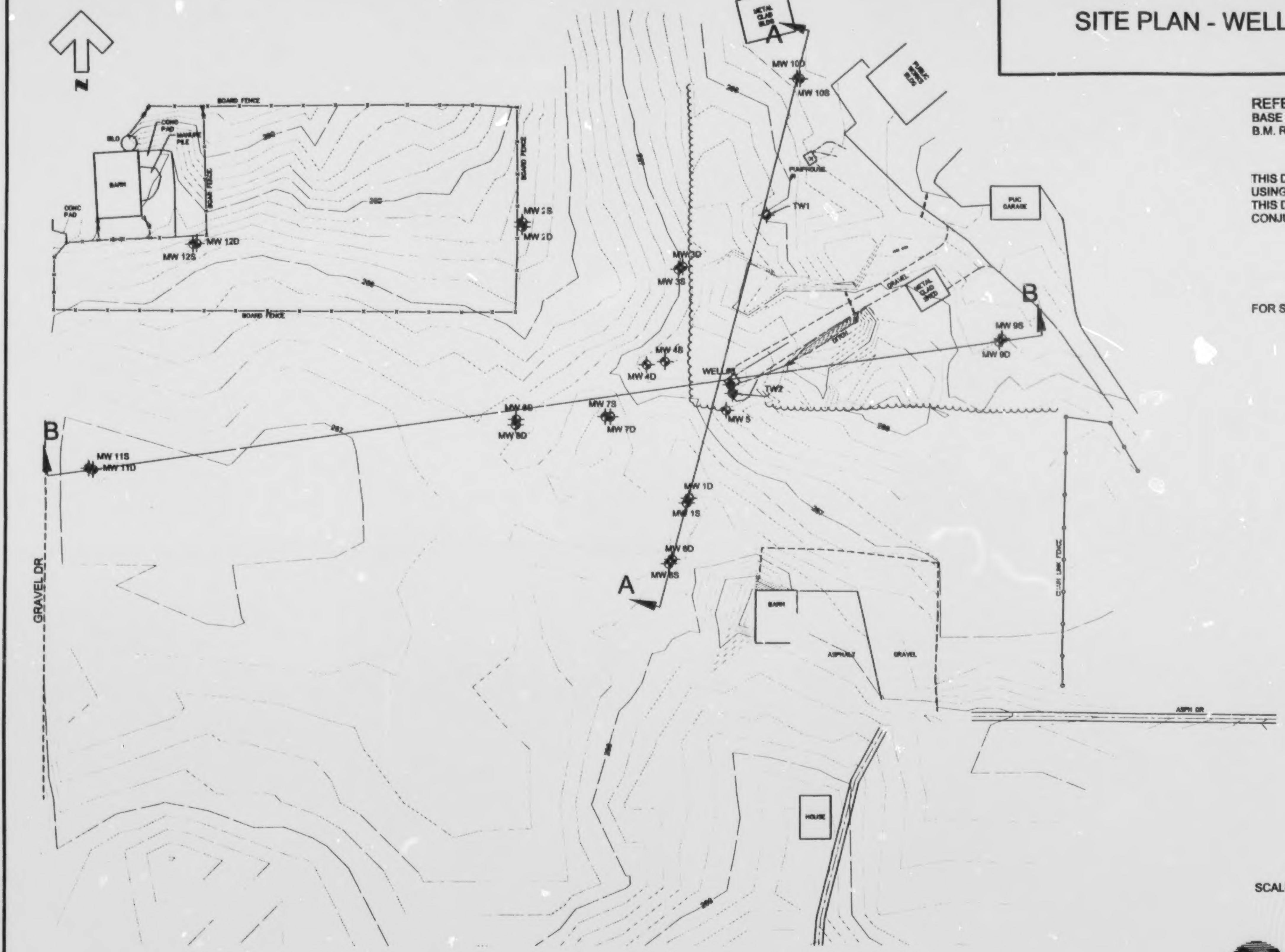
Drawn KD/WDF

Chkd AB

C:\PROJECTS\00_DRFTG\001-3105-1\003105-1-05.DWG WDF 09/17/00 23:39

SITE PLAN - WELL 5 AREA

FIGURE 6



N
BOARD FENCE
SILO
CONC PAD
MANURE PILE
BARN
CONC PAD
BOARD FENCE
MW 12D
MW 12S
MW 2S
MW 2D
MW 3D
MW 3S
MW 4S
MW 4D
METAL CLAD BLDG
A
MW 10D
MW 10S
PUMPHOUSE
TW1
PUC GARAGE
GRAVEL
METAL CLAD SHED
B
MW 9S
MW 9D
WELL #5
TW2
MW 5
MW 7S
MW 7D
MW 8S
MW 8D
B
MW 11S
MW 11D
MW 1D
MW 1S
MW 6D
MW 6S
A
GRAVEL DR
BARN
ASPHALT
GRAVEL
CHAIN LINK FENCE
ASPH DR
HOUSE

REFERENCE
BASE SURVEY SUPPLIED BY
B.M. ROSS AND ASSOCIATES LIMITED

THIS DRAWING HAS BEEN COMPILED
USING INFORMATION FROM VARIOUS
THIS DRAWING IS TO BE READ IN
CONJUNCTION WITH ACCOMPANYING TEXT.

FOR SECTION A-A AND B-B SEE FIGURES 10 & 11

SCALE 1:1500

Date SEPT. 17, 2000

Project 001-3105-1

Golder Associates
LONDON, ONTARIO, CANADA

Drawn WDF

Chkd DB

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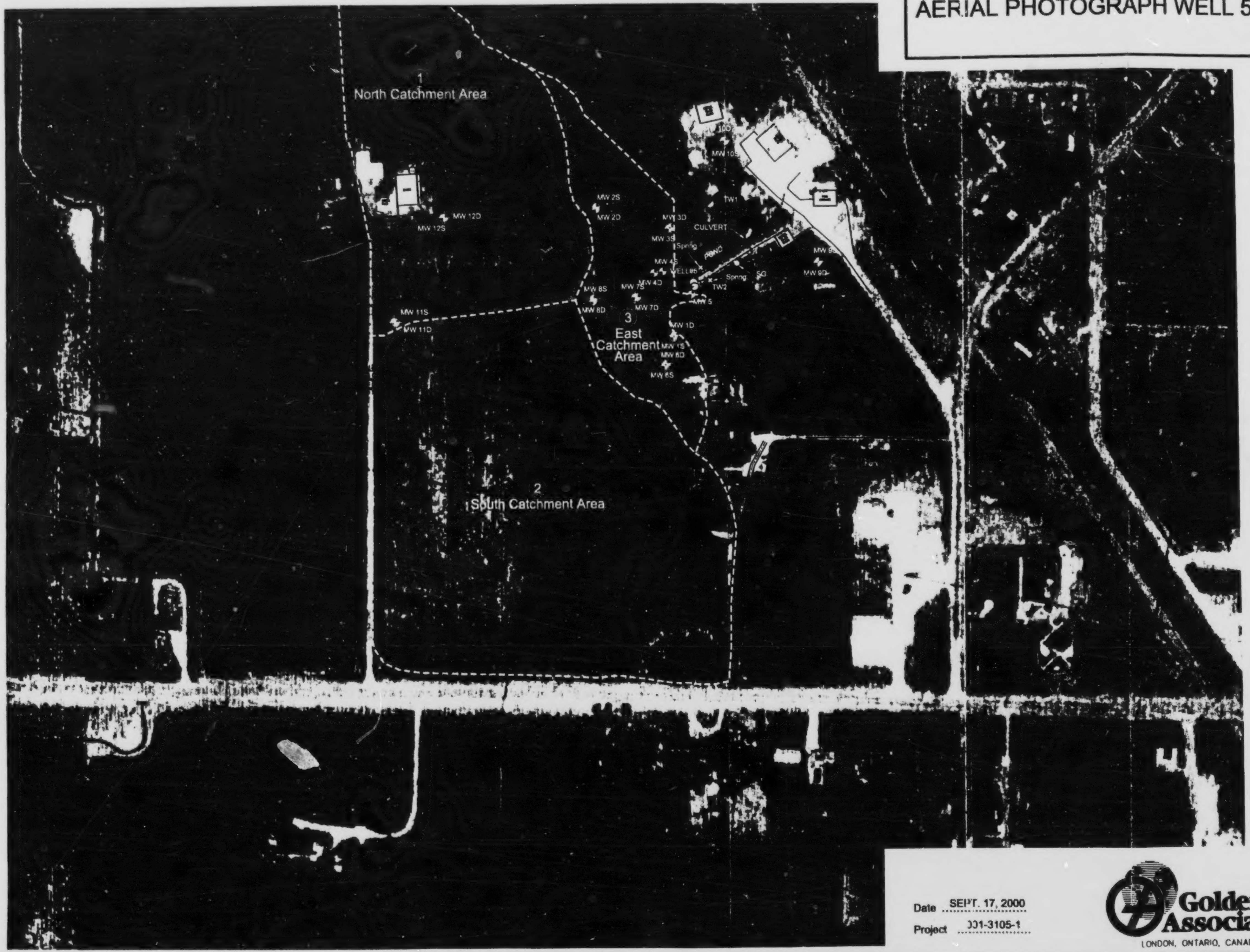
AERIAL PHOTOGRAPH WELL 5 AREA

FIGURE 7



1
North Catchment Area
MW 12D
MW 12S
MW 2S
MW 2D
10D
MW 10S
TW1
MW 3D
CULVERT
MW 3S
Spring
POND
MW 4S
WELL#5
MW 4D
Spring
SG
TW2
MW 9S
MW 9D
MW 8S
MW 7S
MW 8D
MW 7D
MW 5
MW 11S
MW 11D
3
East Catchment Area
MW 1D
MW 1S
MW 6D
MW 6S
2
South Catchment Area

REFERENCE
BASE SURVEY AND CATCHMENT AREAS SUPPLIED BY B.M. ROSS AND ASSOCIATES LIMITED

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT.

SCALE 1:3000

Date SEPT. 17, 2000
Project 001-3105-1

Golder Associates
LONDON, ONTARIO, CANADA

Drawn WDF
Chkd DB

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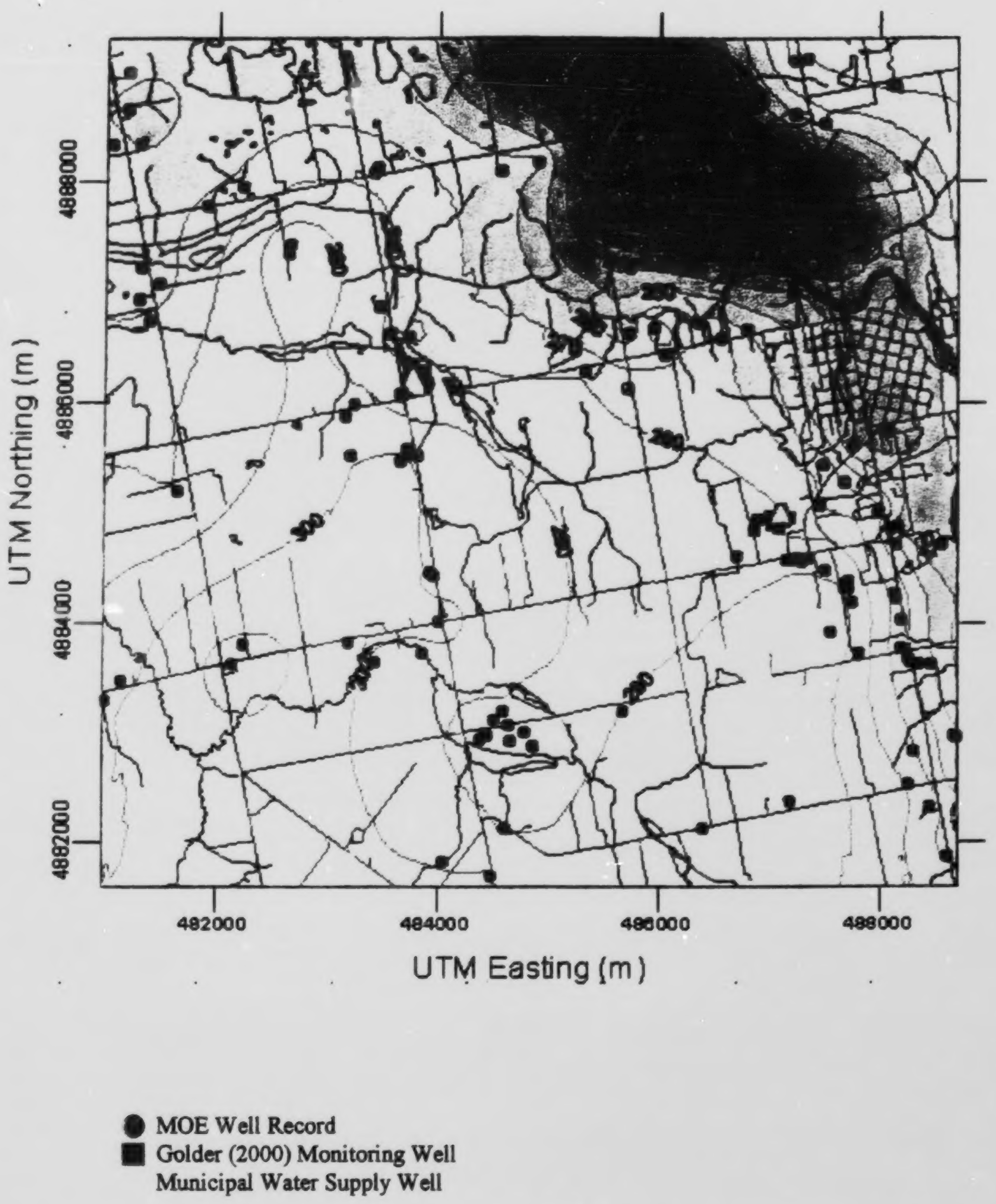
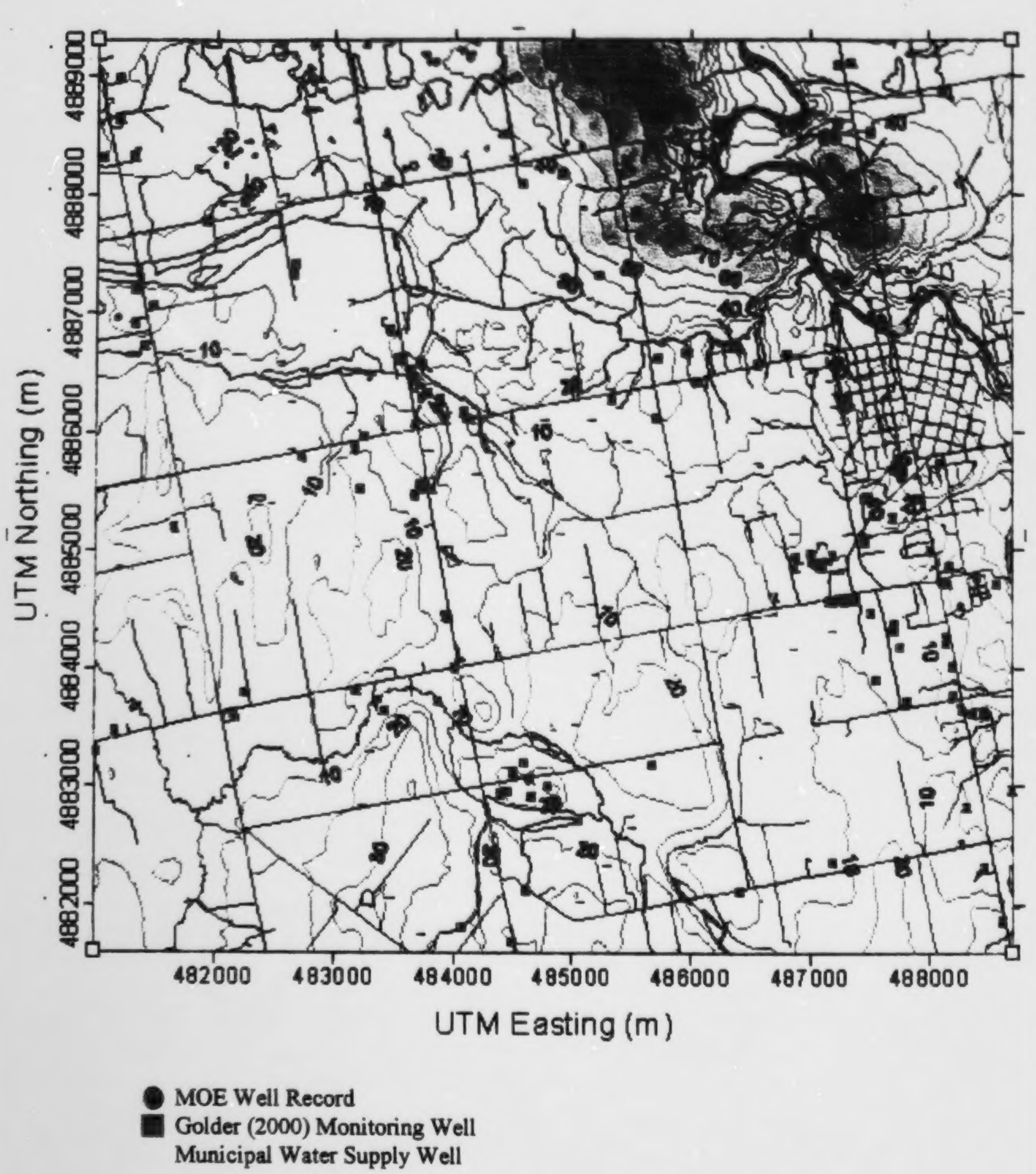

UTM Northing (m)
4888000
4886000
4884000
4882000
UTM Easting (m)
482000
484000
486000
488000
300
280
260
MOE Well Record
Golder (2000) Monitoring Well
Municipal Water Supply Well

Walkerton

Regional Bedrock Surface Elevation (masl)

Golder Associates Ltd.
LONDON, ONTARIO, CANADA

14 SEPTEMBER 2000
PROJECT: 001-3105-1
FIGURE 8


UTM Northing (m)
4889000
4888000
4887000
4886000
4885000
4884000
4883000
4882000
UTM Easting (m)
482000
483000
484000
485000
486000
487000
488000
10
20
30
40
70
MOE Well Record
Golder (2000) Monitoring Well
Municipal Water Supply Well

Walkerton

Regional Overburden Thickness (m)

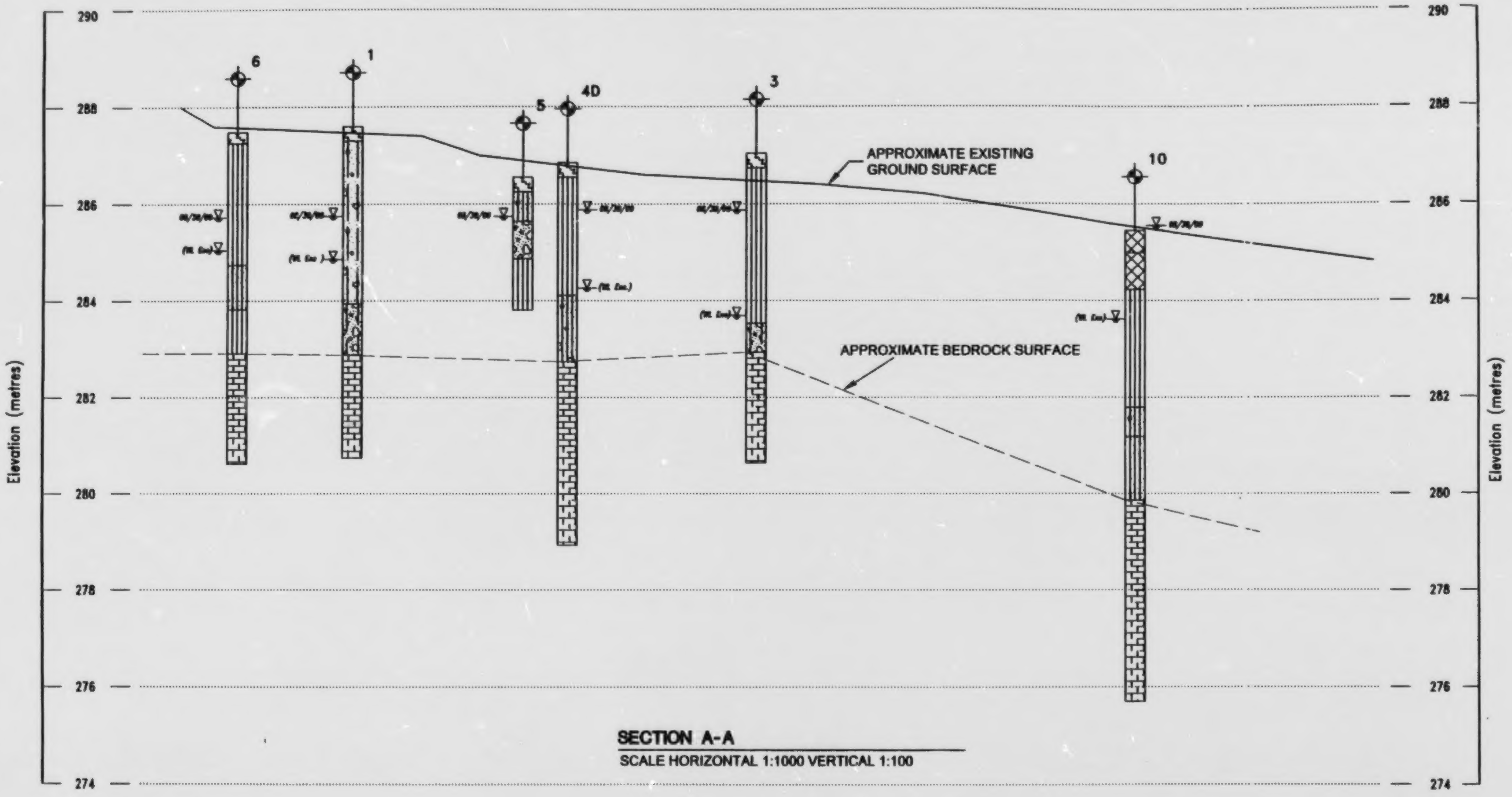
Golder Associates Ltd.
LONDON, ONTARIO, CANADA

14 SEPTEMBER 2000
PROJECT: 001-3105-1
FIGURE 9

SECTION A-A - WELL 5

FIGURE 10

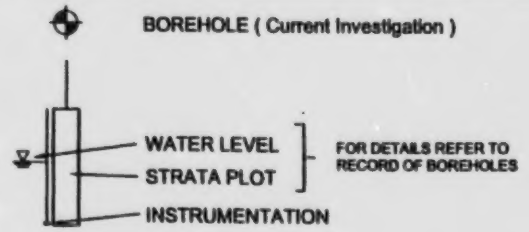
NOTE: THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT


290
288
286
284
282
280
278
276
274
Elevation (metres)
6
1
5
4D
3
10
APPROXIMATE EXISTING GROUND SURFACE
APPROXIMATE BEDROCK SURFACE

SECTION A-A

SCALE HORIZONTAL 1:1000 VERTICAL 1:100

LEGEND


BOREHOLE (Current Investigation)
WATER LEVEL
STRATA PLOT
INSTRUMENTATION
FOR DETAILS REFER TO RECORD OF BOREHOLES

SIMPLIFIED STRATIGRAPHY

▨	FILL	▥	SANDY SILT
▨	TOPSOIL	▨	SANDY SILT AND GRAVEL
▨	SAND	▨	SAND AND GRAVEL
▨	SILTY SAND	▨	SILTY SAND AND GRAVEL
▥	SILT	▦	LIMESTONE BEDROCK

NOTES

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT.

FOR SECTION LOCATION REFER TO FIGURE 6

Date SEPT. 14, 2000
Project 001-3105-1

Golder Associates
LONDON, ONTARIO, CANADA

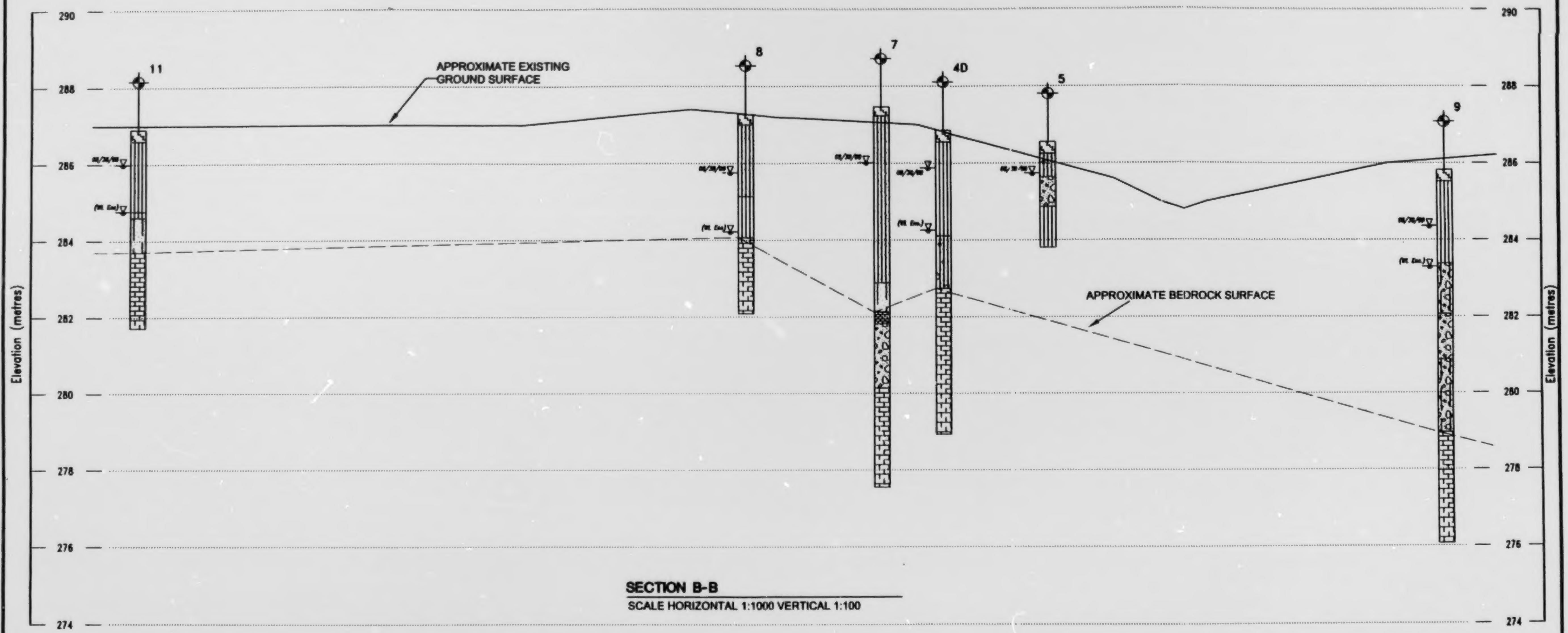
Drawn B.G.
Chkd RW

C:\Projects\Projects\00-jobs\001-3105\SEC-A-A.dwg B.G. 09/14/00 08:28

NOTE: THIS DRAWING IS TO BE READ IN CONJUNCTION
WITH ACCOMPANYING REPORT

SECTION B-B - WELL 5

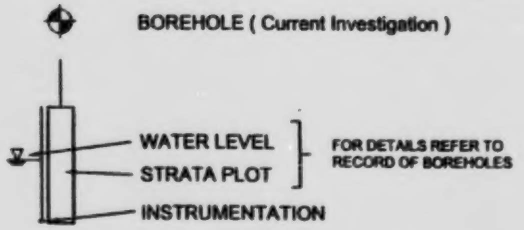
FIGURE 11


290
288
286
284
282
280
278
276
274
Elevation (metres)
11
8
7
4D
5
9
APPROXIMATE EXISTING
GROUND SURFACE
APPROXIMATE BEDROCK SURFACE

SECTION B-B

SCALE HORIZONTAL 1:1000 VERTICAL 1:100

LEGEND


BOREHOLE (Current Investigation)
WATER LEVEL
STRATA PLOT
INSTRUMENTATION
FOR DETAILS REFER TO
RECORD OF BOREHOLES

SIMPLIFIED STRATIGRAPHY

▨ TOPSOIL	▥ SANDY SILT
▨ SAND	▨ SANDY SILT AND GRAVEL
▨ SILTY SAND	▨ SAND AND GRAVEL
▥ SILT	▨ SILT AND GRAVEL
	▦ LIMESTONE BEDROCK

NOTES

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT.

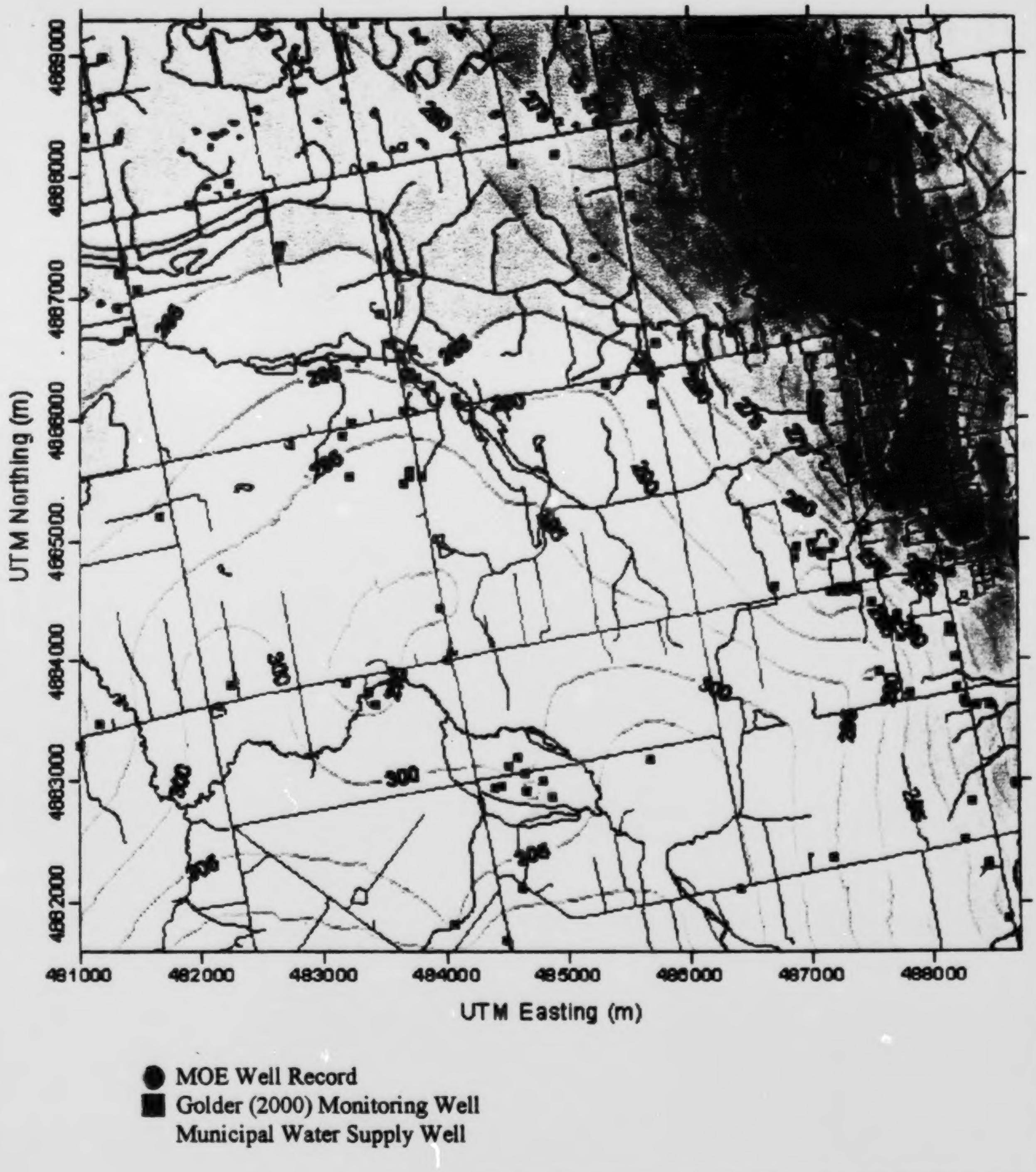
FOR SECTION LOCATION REFER TO FIGURE 6

Date SEPT. 14, 2000
Project 001-3105-1

Golder Associates
LONDON, ONTARIO, CANADA

Drawn B.G.
Chkd RW

C:\Projects\Projects\00-jobs\001-3105\SEC-B-B.dwg B.G. 09/15/00 16:37



4869000
4868000
4867000
4866000
4865000
4864000
4863000
4862000
UTM Northing (m)
481000
482000
483000
484000
485000
486000
487000
488000
UTM Easting (m)
270
280
285
290
295
300
305
MOE Well Record
Golder (2000) Monitoring Well
Municipal Water Supply Well

Walkerton

Regional Bedrock Static Water Level Elevation (masl)

Golder Associates Ltd.
LONDON, ONTARIO, CANADA

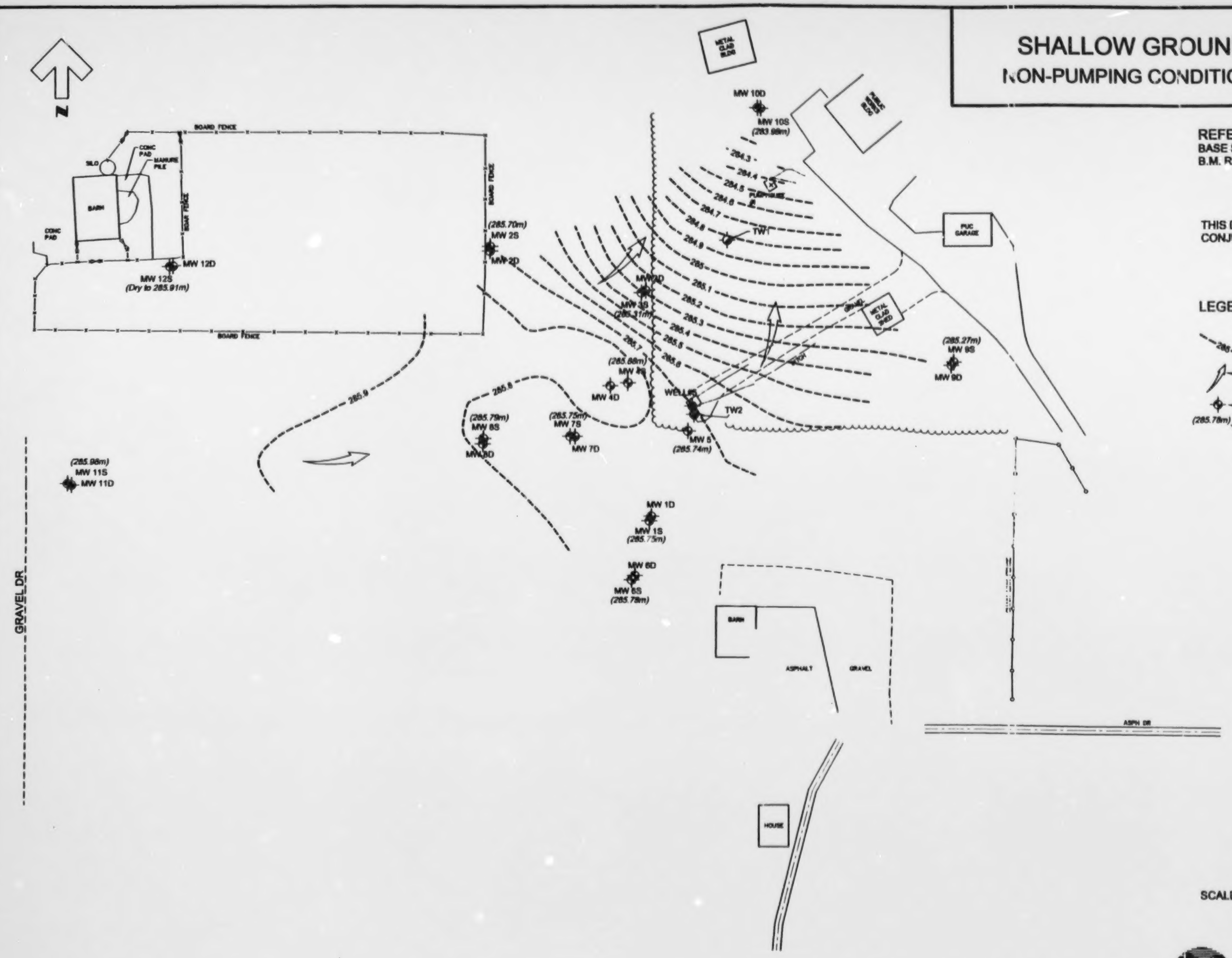
14 SEPTEMBER 2000	PROJECT: 001-3105-1	FIGURE 12

SHALLOW GROUNDWATER
NON-PUMPING CONDITIONS - WELL 5

FIGURE 13

REFERENCE
BASE SURVEY SUPPLIED BY
B.M. ROSS AND ASSOCIATES LIMITED

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT.


N
BOARD FENCE
SILO
CONC PAD
MANURE PILE
BARN
CONC PAD
BOARD FENCE
BOARD FENCE
BOARD FENCE
MW 12D
MW 12S
(Dry to 285.91m)
(285.70m)
MW 2S
MW 2D
METAL CLAD BLDG
MW 10D
MW 10S
(283.98m)
284.3
284.4
284.5
PUMPHOUSE
284.6
284.7
284.8
TW1
284.9
285
285.1
285.2
285.3
285.4
285.5
285.6
285.7
285.8
285.9
MW 3D
MW 3S
(285.31m)
(285.88m)
MW 4S
MW 4D
WELL #5
TW2
MW 5
(285.74m)
METAL CLAD SHED
PUC GARAGE
(285.27m)
MW 9S
MW 9D
(285.79m)
MW 8S
MW 8D
(285.75m)
MW 7S
MW 7D
(285.98m)
MW 11S
MW 11D
MW 1D
MW 1S
(285.75m)
MW 6D
MW 6S
(285.78m)
GRAVEL DR
BARN
ASPHALT
GRAVEL
ASPH DR
HOUSE

LEGEND

285	INFERRED GROUND WATER ELEVATION CONTOURS (m)
⇧	INFERRED GROUND WATER FLOW DIRECTION
⌖	MONITORING WELL LOCATION
(285.78m)	WATER LEVEL ELEVATION AUG. 30, 2000

SCALE 1:1500

Date SEPT. 17, 2000
Project 001-3105-1

Golder Associates
LONDON, ONTARIO, CANADA

Drawn WDF
Chkd DB

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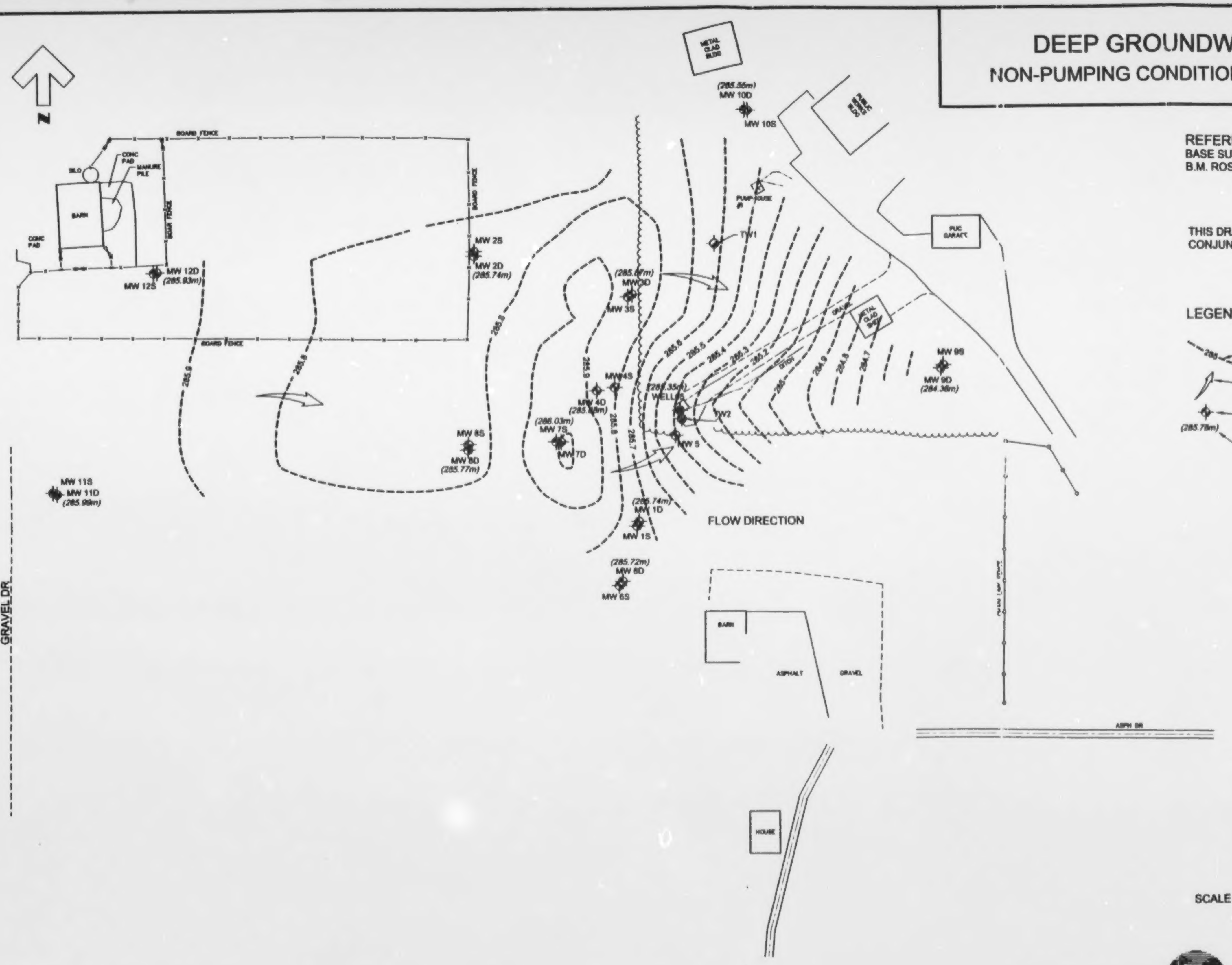
DEEP GROUNDWATER
NON-PUMPING CONDITIONS - WELL 5

FIGURE 14



N
METAL CLAD BLDG
PUBLIC BLDG
BOARD FENCE
SILO
CONC PAD
MANURE PILE
BARN
CONC PAD
(285.55m)
MW 10D
MW 10S
PUMP HOUSE
TW1
PUC GARAGE
MW 2S
MW 2D
(285.74m)
MW 12D
(285.93m)
MW 12S
(285.67m)
MW 3D
MW 3S
METAL CLAD SHED
GRAVEL
285.9
285.8
285.8
285.9
285.6
285.5
285.4
285.3
285.2
285.1
285.0
284.9
284.8
284.7
DITCH
MW 9S
MW 9D
(284.36m)
MW 4S
MW 4D
(285.88m)
(285.35m)
WELL 5
TW2
MW 5
(286.03m)
MW 7S
MW 7D
285.8
285.7
MW 8S
MW 8D
(285.77m)
MW 11S
MW 11D
(285.99m)
(285.74m)
MW 1D
MW 1S
FLOW DIRECTION
(285.72m)
MW 6D
MW 6S
GRAVEL DR.
BARN
ASPHALT
GRAVEL
ASPH DR
HOUSE

REFERENCE
BASE SURVEY SUPPLIED BY
B.M. ROSS AND ASSOCIATES LIMITED

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT.

LEGEND

285	INFERRED GROUND WATER ELEVATION CONTOURS (m)
	INFERRED GROUND WATER FLOW DIRECTION
	MONITORING WELL LOCATION
(285.78m)	WATER LEVEL ELEVATION AUG. 30, 2000

SCALE 1:1500

Date SEPT. 17, 2000
Project 001-3105-1

Golder Associates
LONDON, ONTARIO, CANADA

Drawn WDF
Chkd

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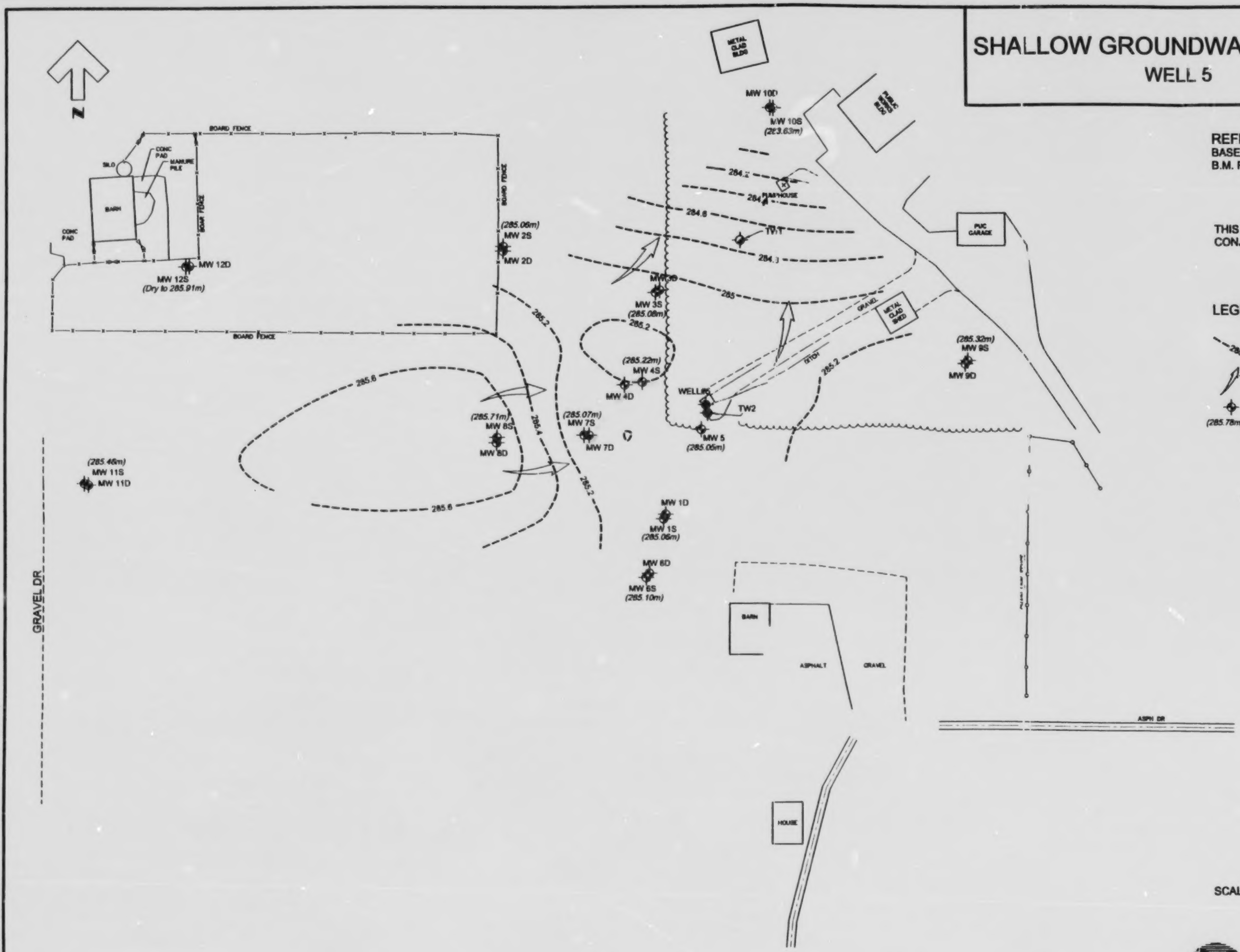
SHALLOW GROUNDWATER @ 24HRS
WELL 5

FIGURE 15


N
BOARD FENCE
SILO
CONC PAD
MANURE PILE
BARN
CONC PAD
BOARD FENCE
BOARD FENCE
(285.06m)
MW 2S
MW 2D
MW 12D
MW 12S
(Dry to 285.91m)
BOARD FENCE
METAL CLAD BLDG
MW 10D
MW 10S
(283.63m)
PUBLIC WORKS BLDG
284.2
PUMPHOUSE
284.4
284.6
TW1
284.8
PUC GARAGE
MW 3D
MW 3S
(285.08m)
285
285.2
285.2
GRAVEL
METAL CLAD SHED
DITCH
285.2
(285.22m)
MW 4S
MW 4D
WELL #5
TW2
(285.32m)
MW 9S
MW 9D
285.6
(285.71m)
MW 8S
MW 8D
285.4
(285.07m)
MW 7S
MW 7D
MW 5
(285.05m)
(285.46m)
MW 11S
MW 11D
285.6
285.2
MW 1D
MW 1S
(285.06m)
MW 6D
MW 6S
(285.10m)
GRAVEL DR
BARN
ASPHALT
GRAVEL
ASPH DR
HOUSE

REFERENCE
BASE SURVEY SUPPLIED BY
B.M. ROSS AND ASSOCIATES LIMITED

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT.

LEGEND

285	INFERRED GROUND WATER ELEVATION CONTOURS (m)
	INFERRED GROUND WATER FLOW DIRECTION
	MONITORING WELL LOCATION
(285.78m)	WATER LEVEL ELEVATION ~24HRS AFTER PUMP TEST

SCALE 1:1500

Date SEPT. 17, 2000
Project 001-3105-1

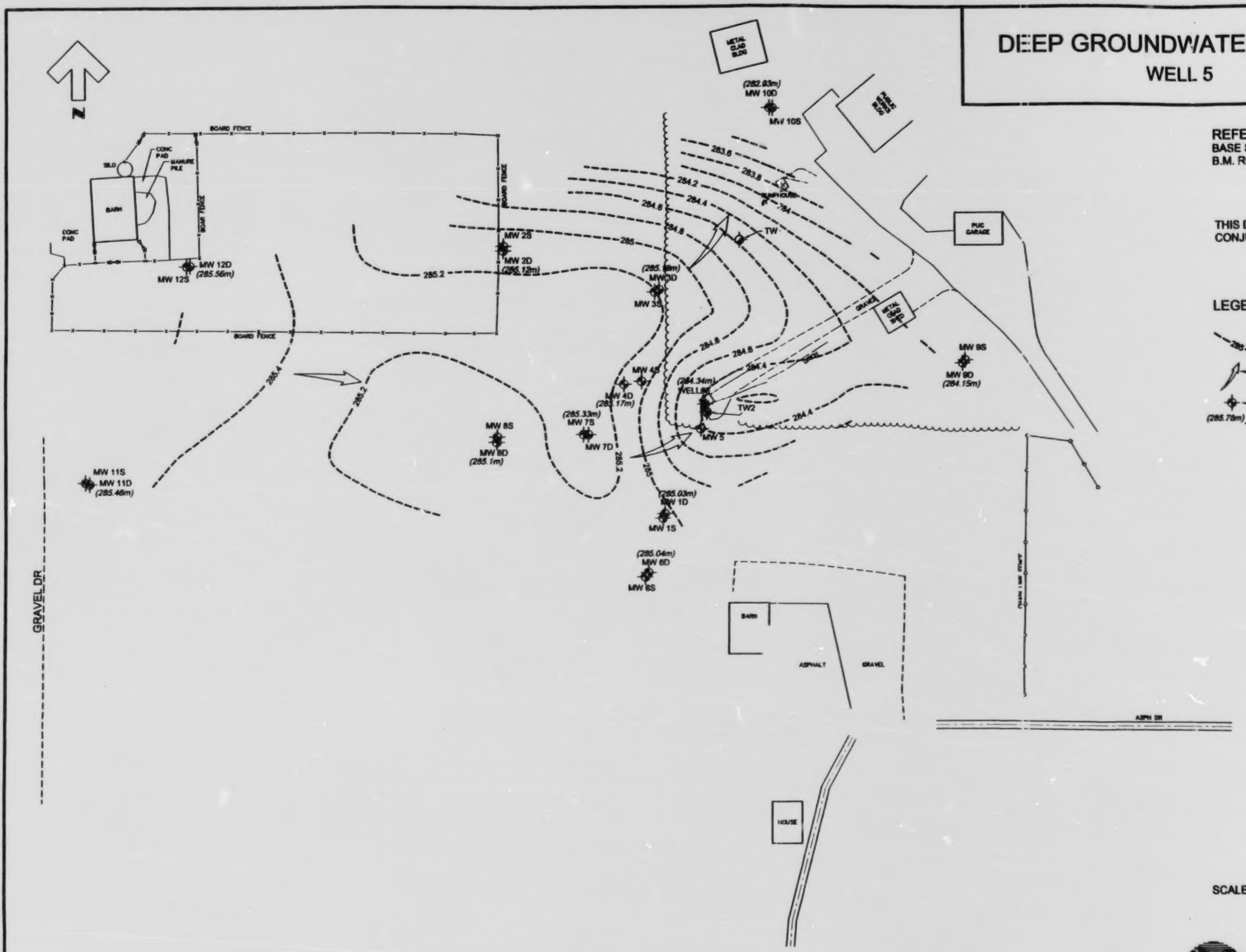
Golder Associates
LONDON, ONTARIO, CANADA

Drawn WDF
Chkd AB

C:\PROJECTS\00_DRFTG\001-3105-1\003105-1-15.DWG WDF 09/18/00 00:46

DEEP GROUNDWATER @ 24HRS
WELL 5

FIGURE 16


N
METAL CLAD BLDG
(282.93m)
MW 10D
MW 10S
PUBLIC WORKS BLDG
BOARD FENCE
SILO
CONC PAD
MANURE PILE
BARN
CONC PAD
BOARD FENCE
BOARD FENCE
BOARD FENCE
MW 12D
(285.56m)
MW 12S
MW 2S
MW 2D
(285.12m)
285.2
283.6
283.8
284.2
284.4
284.6
284.8
285
284
PUMPHOUSE
TW
PUC GARAGE
(285.18m)
MW 3D
MW 3S
GRAVEL
METAL CLAD SHED
284.8
284.6
284.4
MW 9S
MW 9D
(284.15m)
MW 4S
MW 4D
(285.17m)
(284.34m)
WELL 5
TW2
284.4
MW 5
285.4
285.2
(285.33m)
MW 7S
MW 7D
285.2
285
MW 8S
MW 8D
(285.1m)
MW 11S
MW 11D
(285.46m)
(285.03m)
MW 1D
MW 1S
(285.04m)
MW 6D
MW 6S
GRAVEL DR
BARN
ASPHALT
GRAVEL
ASPH DR
HOUSE

REFERENCE
BASE SURVEY SUPPLIED BY
B.M. ROSS AND ASSOCIATES LIMITED

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT.

LEGEND

285 — INFERRED GROUND WATER ELEVATION CONTOURS (m)

INFERRED GROUND WATER FLOW DIRECTION

MONITORING WELL LOCATION

(285.78m) — WATER LEVEL ELEVATION ~24HRS AFTER PUMP TEST

SCALE 1:1500

Date SEPT. 17, 2000
Project 001-3105-1

Golder Associates
LONDON, ONTARIO, CANADA

Drawn WDF
Chkd

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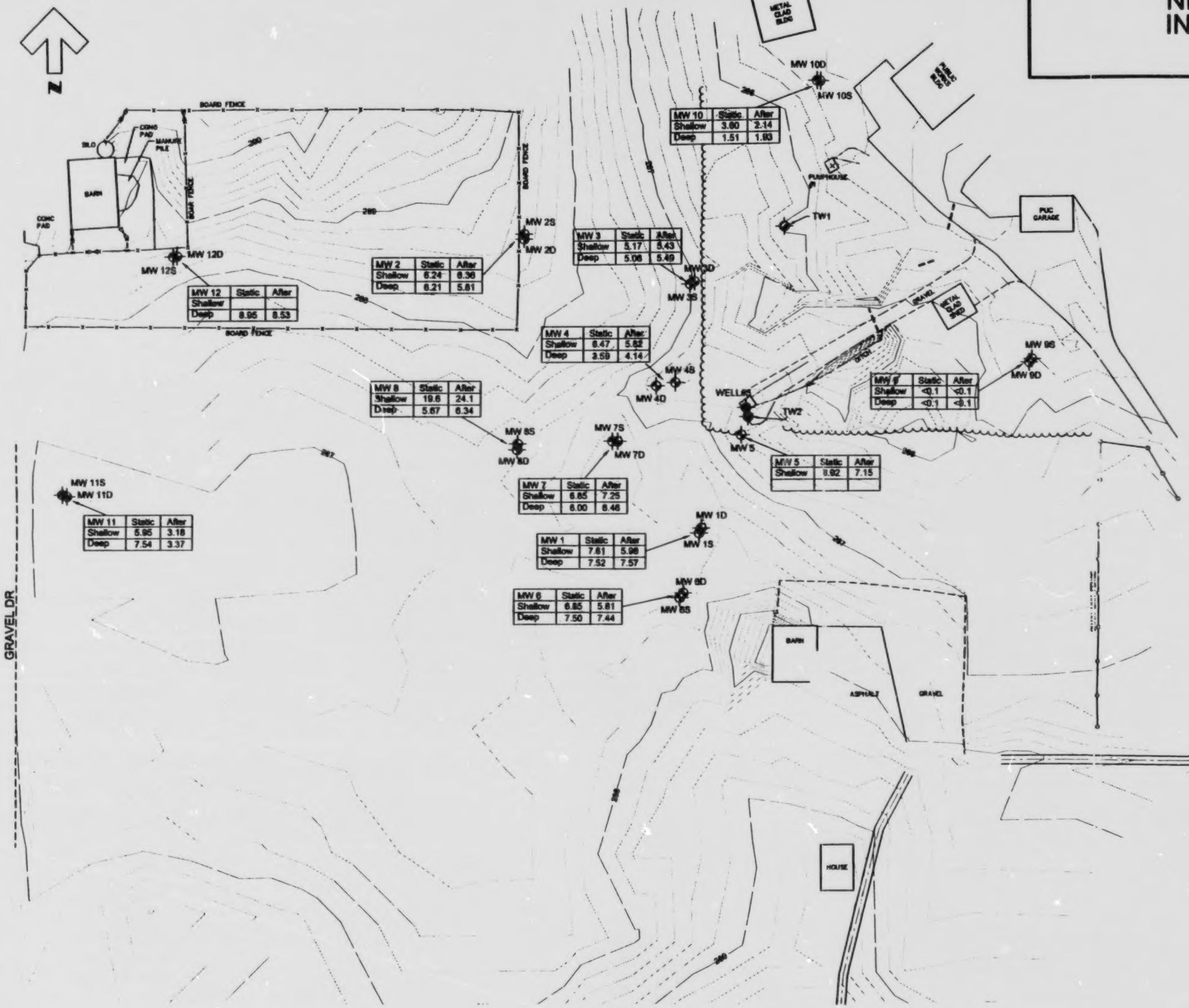
NITRATE + NITRITE IN GROUNDWATER

WELL 5

FIGURE 17


N
BOARD FENCE
SILO
CONC PAD
MANURE PILE
BARN
BOARD FENCE
CONC PAD
MW 12D
MW 12S
MW 2S
MW 2D
MW 3D
MW 3S
MW 4S
MW 4D
MW 8S
MW 8D
MW 7S
MW 7D
MW 11S
MW 11D
MW 1D
MW 1S
MW 6D
MW 6S
METAL CLAD BLDG
MW 10D
MW 10S
PUMPHOUSE
TW1
PUC GARAGE
GRAVEL
METAL CLAD SHED
MW 9S
MW 9D
WELL #5
TW2
MW 5
BARN
ASPHALT
GRAVEL
ASPH DR
GRAVEL DR
HOUSE
288
289
286
287
285

MW 12	Static	After
Shallow		
Deep	8.95	8.53

MW 2	Static	After
Shallow	6.24	6.36
Deep	6.21	5.81

MW 3	Static	After
Shallow	5.17	5.43
Deep	5.06	5.49

MW 10	Static	After
Shallow	3.80	2.14
Deep	1.51	1.93

MW 4	Static	After
Shallow	6.47	5.82
Deep	3.59	4.14

MW 8	Static	After
Shallow	19.6	24.1
Deep	5.67	6.34

MW 9	Static	After
Shallow	<0.1	<0.1
Deep	<0.1	<0.1

MW 5	Static	After
Shallow	8.92	7.15

MW 7	Static	After
Shallow	6.85	7.25
Deep	6.00	6.46

MW 11	Static	After
Shallow	5.95	3.18
Deep	7.54	3.37

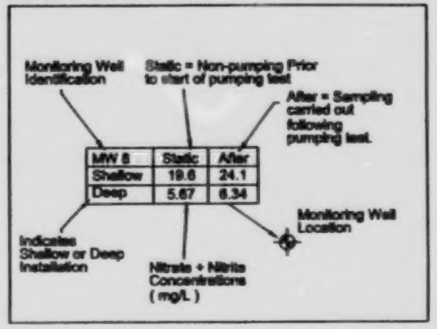
MW 1	Static	After
Shallow	7.61	5.98
Deep	7.52	7.57

MW 6	Static	After
Shallow	6.85	5.81
Deep	7.50	7.44

REFERENCE
BASE SURVEY SUPPLIED BY
B.M. ROSS AND ASSOCIATES LIMITED

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT.

LEGEND


Monitoring Well Identification
Static = Non-pumping Prior to start of pumping test
After = Sampling carried out following pumping test.
Monitoring Well Location
Indicates Shallow or Deep Installation
Nitrate + Nitrite Concentrations (mg/L)

MW 8	Static	After
Shallow	19.6	24.1
Deep	5.67	6.34

SCALE 1:1500

Date SEPT. 17, 2000
Project 001-3105-1

Golder Associates
LONDON, ONTARIO, CANADA

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Chkd DB

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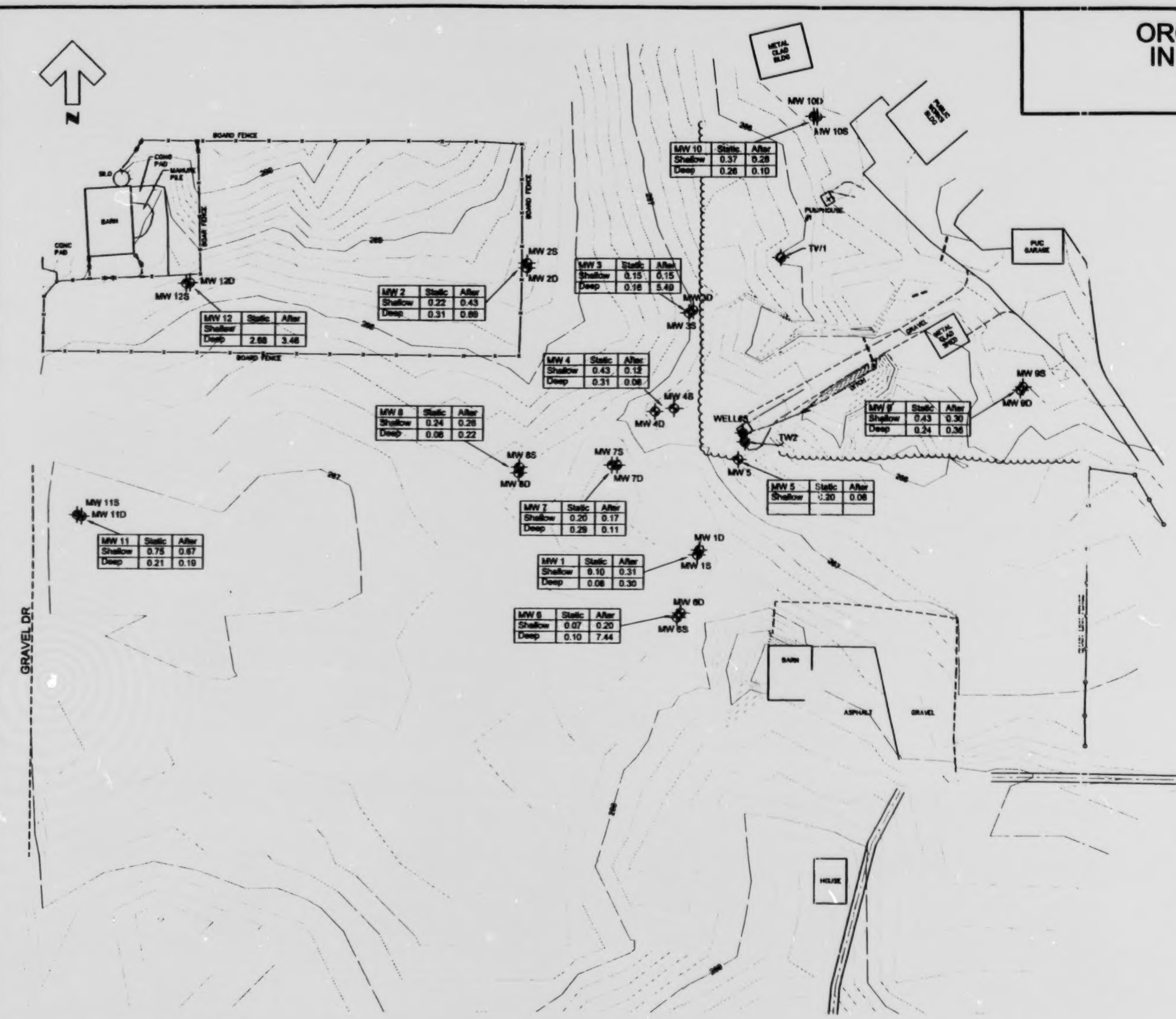
ORGANIC NITROGEN IN GROUNDWATER

WELL 5

FIGURE 18

REFERENCE
BASE SURVEY SUPPLIED BY
B.M. ROSS AND ASSOCIATES LIMITED

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT.


N
BOARD FENCE
SILO
CONC PAD
MANURE PILE
BARN
CONC PAD
MW 12D
MW 12S
MW 2S
MW 2D
MW 3D
MW 3S
MW 4S
MW 4D
METAL CLAD BLDG
MW 10D
MW 10S
PUMPHOUSE
TW/1
PUC GARAGE
GRAVEL
METAL CLAD BLDG
WELL#5
TW2
MW 5
MW 9S
MW 9D
MW 8S
MW 8D
MW 7S
MW 7D
MW 11S
MW 11D
MW 1D
MW 1S
MW 6D
MW 6S
GRAVEL DR
BARN
ASPHALT
GRAVEL
ASPH DR
HOUSE
SCALE 1:1500

MW 12	Static	After
Shallow		
Deep	2.88	3.46

MW 2	Static	After
Shallow	0.22	0.43
Deep	0.31	0.88

MW 3	Static	After
Shallow	0.15	0.15
Deep	0.16	5.49

MW 10	Static	After
Shallow	0.37	0.28
Deep	0.26	0.10

MW 4	Static	After
Shallow	0.43	0.12
Deep	0.31	0.08

MW 8	Static	After
Shallow	0.24	0.26
Deep	0.06	0.22

MW 9	Static	After
Shallow	0.43	0.30
Deep	0.24	0.36

MW 5	Static	After
Shallow	0.20	0.08

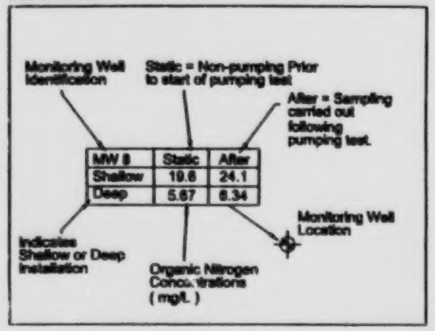
MW 7	Static	After
Shallow	0.20	0.17
Deep	0.29	0.11

MW 11	Static	After
Shallow	0.75	0.67
Deep	0.21	0.10

MW 1	Static	After
Shallow	0.10	0.31
Deep	0.08	0.30

MW 6	Static	After
Shallow	0.07	0.20
Deep	0.10	7.44

LEGEND


Monitoring Well Identification
Static = Non-pumping Prior to start of pumping test
After = Sampling carried out following pumping test.
MW 8 | Static | After
Shallow | 19.6 | 24.1
Deep | 5.67 | 6.34
Indicates Shallow or Deep Installation
Organic Nitrogen Concentrations (mg/L)
Monitoring Well Location

Date SEPT. 17, 2000
Project 001-3105-1

Golder Associates
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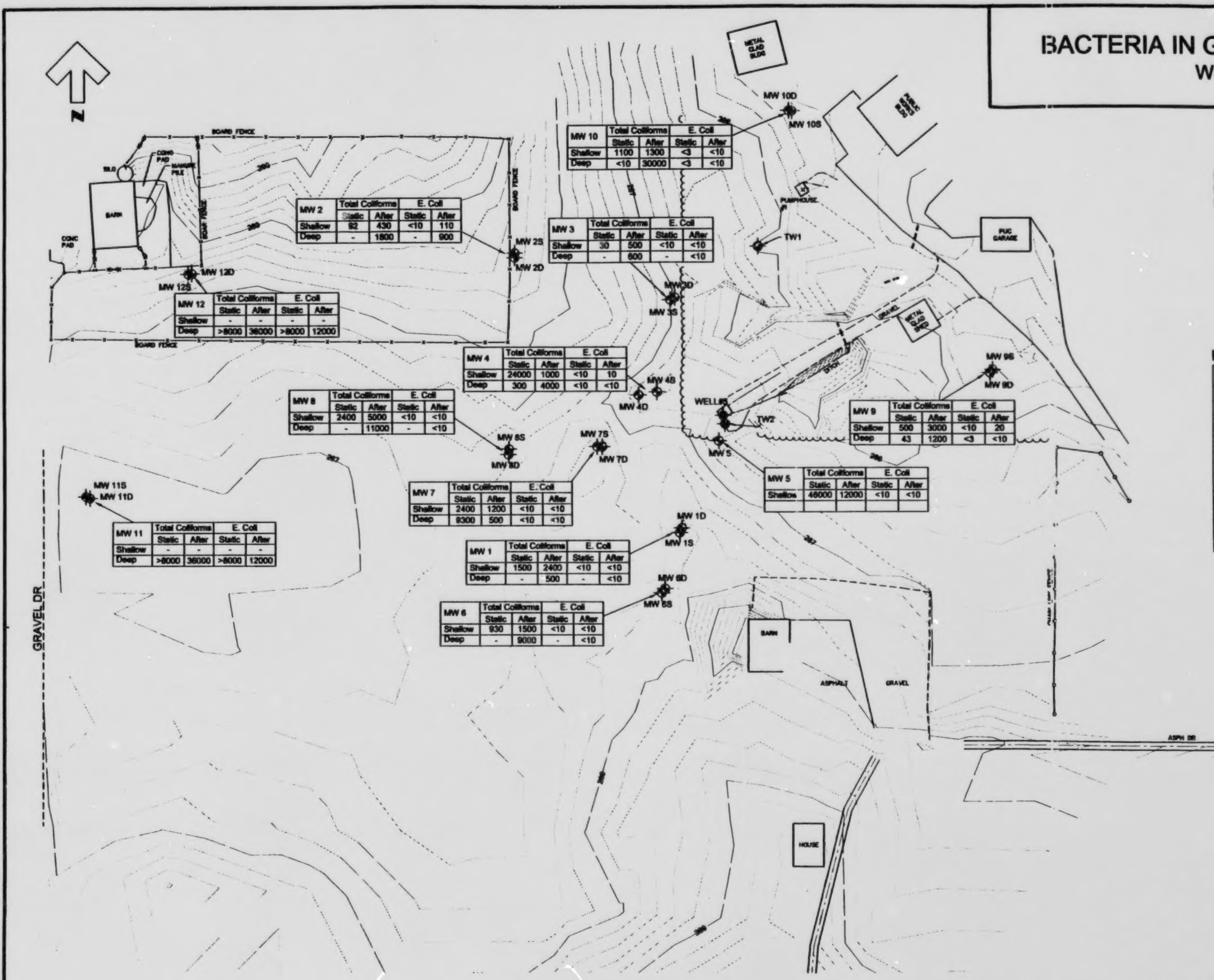
BACTERIA IN GROUNDWATER
WELL 5

FIGURE 19


N
BOARD FENCE
SILO
CONC PAD
MANURE PILE
BARN
CONC PAD
BOARD FENCE
MW 12D
MW 12S
MW 2S
MW 2D
METAL CLAD BLDG
MW 10D
MW 10S
PUMPHOUSE
TW1
PUC GARAGE
MW 3D
MW 3S
GRAVEL
METAL CLAD SHED
MW 9S
MW 9D
MW 4S
MW 4D
WELL #5
TW2
MW 5
MW 8S
MW 8D
MW 7S
MW 7D
MW 11S
MW 11D
MW 1D
MW 1S
MW 6D
MW 6S
BARN
ASPHALT
GRAVEL
ASPH DR
HOUSE
GRAVEL DR
290
288
287

MW 10	Total Coliforms		E. Coli	
	Static	After	Static	After
Shallow	1100	1300	<3	<10
Deep	<10	30000	<3	<10

MW 2	Total Coliforms		E. Coli	
	Static	After	Static	After
Shallow	92	430	<10	110
Deep	-	1800	-	900

MW 3	Total Coliforms		E. Coli	
	Static	After	Static	After
Shallow	30	500	<10	<10
Deep	-	600	-	<10

MW 12	Total Coliforms		E. Coli	
	Static	After	Static	After
Shallow	-	-	-	-
Deep	>8000	36000	>8000	12000

MW 4	Total Coliforms		E. Coli	
	Static	After	Static	After
Shallow	24000	1000	<10	10
Deep	300	4000	<10	<10

MW 8	Total Coliforms		E. Coli	
	Static	After	Static	After
Shallow	2400	5000	<10	<10
Deep	-	11000	-	<10

MW 9	Total Coliforms		E. Coli	
	Static	After	Static	After
Shallow	500	3000	<10	20
Deep	43	1200	<3	<10

MW 5	Total Coliforms		E. Coli	
	Static	After	Static	After
Shallow	46000	12000	<10	<10

MW 7	Total Coliforms		E. Coli	
	Static	After	Static	After
Shallow	2400	1200	<10	<10
Deep	9300	500	<10	<10

MW 11	Total Coliforms		E. Coli	
	Static	After	Static	After
Shallow	-	-	-	-
Deep	>8000	36000	>8000	12000

MW 1	Total Coliforms		E. Coli	
	Static	After	Static	After
Shallow	1500	2400	<10	<10
Deep	-	500	-	<10

MW 6	Total Coliforms		E. Coli	
	Static	After	Static	After
Shallow	930	1500	<10	<10
Deep	-	9000	-	<10

REFERENCE
BASE SURVEY SUPPLIED BY
B.M. ROSS AND ASSOCIATES LIMITED

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT.

LEGEND

Monitoring Well Identification

Static = Non-pumping Prior to start of pumping test

After = Sampling carried out following pumping test.

MW 8	Total Coliforms		E. Coli	
	Static	After	Static	After
Shallow	2400	5000	<10	<10
Deep	-	11000	-	<10

Indicates Shallow or Deep Installation

Bacteria Concentrations (CFU/100mL)

Monitoring Well Location

SCALE 1:1500

Date SEPT. 17, 2000
Project 001-3105-1

Golder Associates
LONDON, ONTARIO, CANADA

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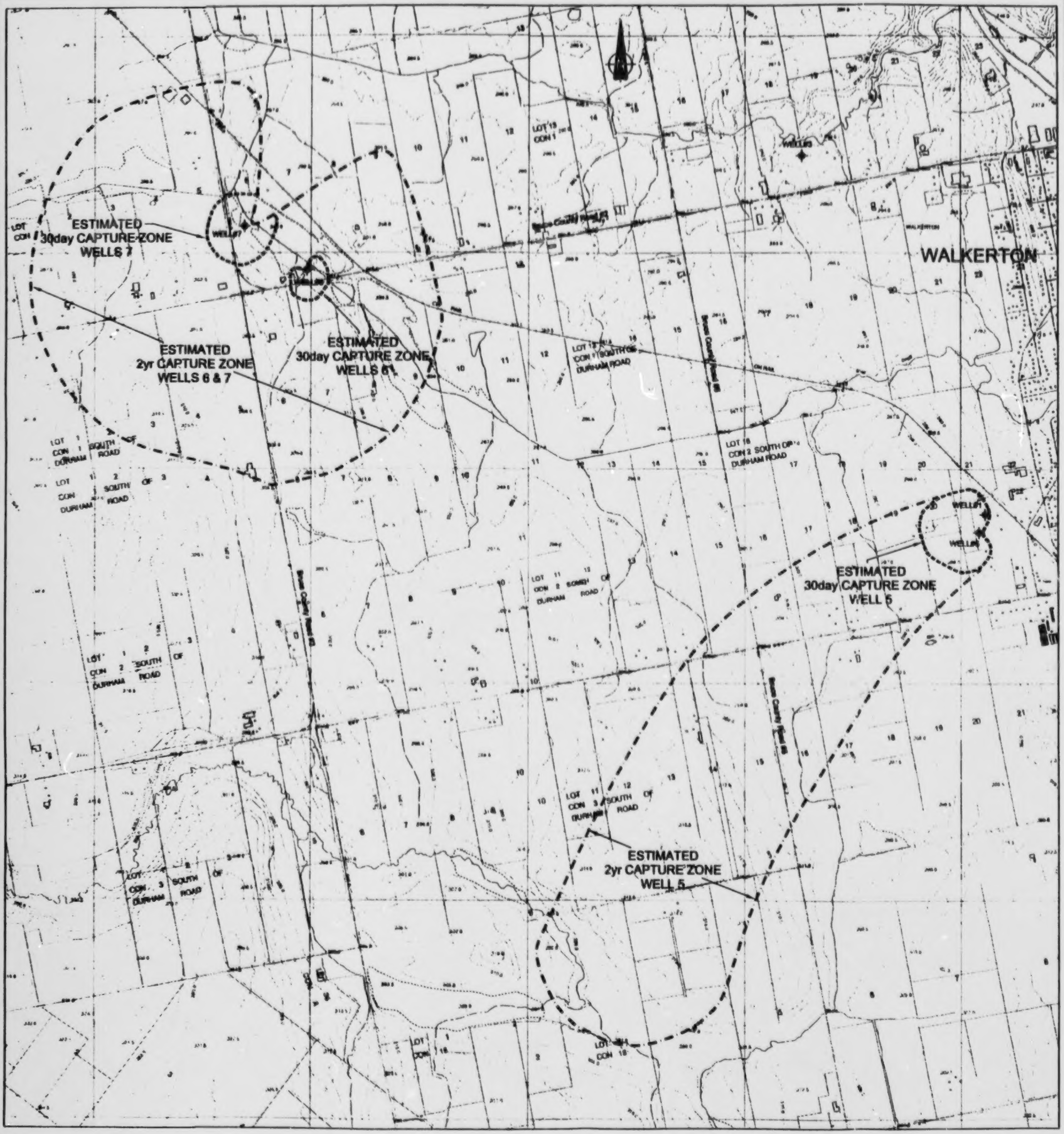
Chkd

C:\PROJECTS\00_DRFTG\001-3105-1\003105-1-19.DWG WDF 09/18/00 01:28

ESTIMATED CAPTURE ZONES
WELLS 5,6 & 7

FIGURE 20


ESTIMATED 30day CAPTURE ZONE WELLS 7
WELL 7
ESTIMATED 2yr CAPTURE ZONE WELLS 6 & 7
ESTIMATED 30day CAPTURE ZONE WELLS 6
WELLS
WALKERTON
LOT 13 CON 1
LOT CON 1 SOUTH OF DURHAM ROAD
LOT CON 1 SOUTH OF DURHAM ROAD
LOT 16 CON 2 SOUTH OF DURHAM ROAD
LOT 11 12 CON 2 SOUTH OF DURHAM ROAD
LOT 1 2 CON 2 SOUTH OF DURHAM ROAD
LOT 11 12 CON 3 SOUTH OF DURHAM ROAD
LOT CON 3 SOUTH OF DURHAM ROAD
WELL 1
WELL 5
ESTIMATED 30day CAPTURE ZONE WELL 5
ESTIMATED 2yr CAPTURE ZONE WELL 5
Bruce County Road
LOT CON 18

REFERENCE
1:10000 TOPOGRAPHIC MAPPING
PROVIDED BY THE
MINISTRY OF NATURAL RESOURCES
ONTARIO

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT.

LEGEND

ESTIMATED 30day CAPTURE ZONE

ESTIMATED 2yr CAPTURE ZONE

✦ MUNICIPAL WELL LOCATION

SCALE 1:20,000

Date SEPT. 17, 2000
Project 001-3105-1

Golder Associates
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Drawn WDF
Chkd DB

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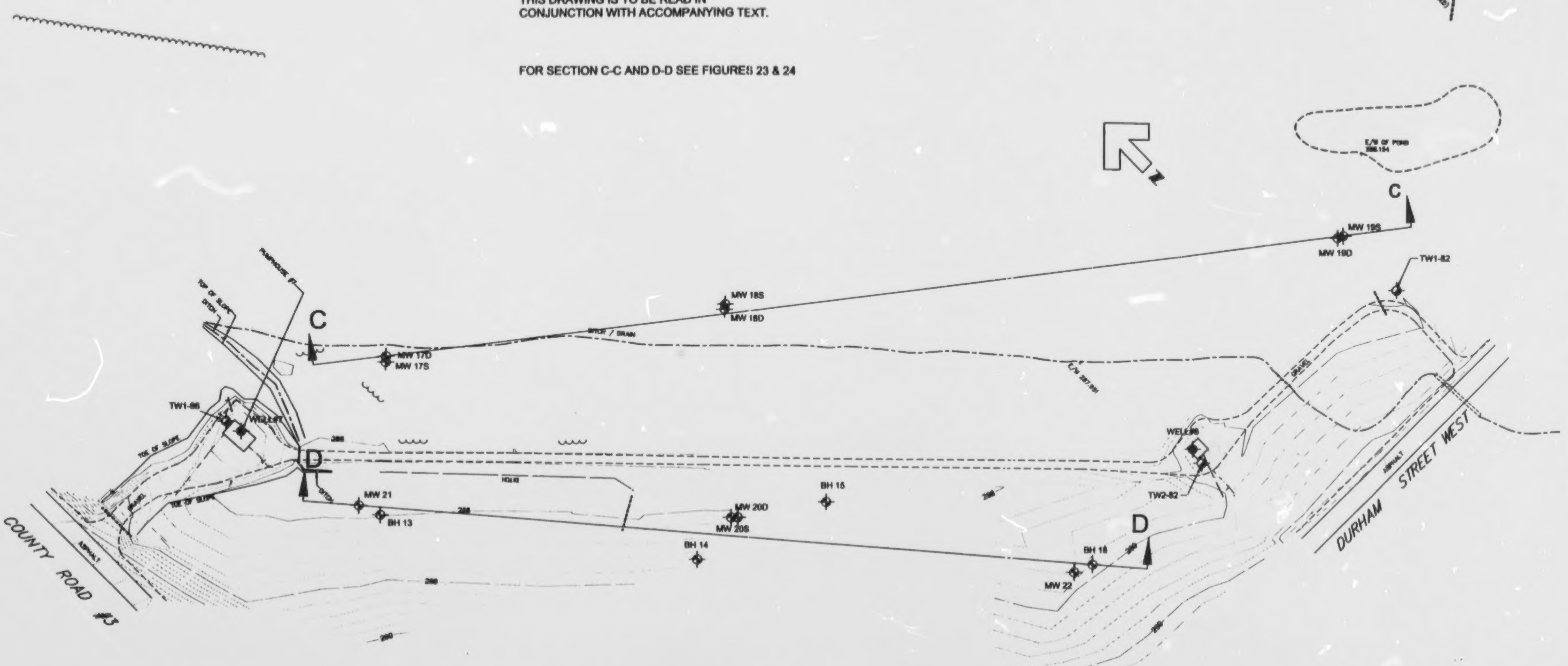
SITE PLAN - WELLS 6 & 7

FIGURE 21

REFERENCE
BASE SURVEY SUPPLIED BY
B.M. ROSS AND ASSOCIATES LIMITED

THIS DRAWING IS TO BE READ IN
CONJUNCTION WITH ACCOMPANYING TEXT.

FOR SECTION C-C AND D-D SEE FIGURES 23 & 24


N
E/W OF POND
288.154
C
MW 19S
MW 19D
TW1-82
PUMPHOUSE #7
TOP OF SLOPE
DITCH
C
DITCH / DRAIN
MW 18S
MW 18D
MW 17D
MW 17S
E/W 287.881
GRAVEL
TW1-86
WELL #7
TOE OF SLOPE
288
D
HOLES
DITCH
TOE OF SLOPE
GRAVEL
MW 21
BH 13
288
BH 15
MW 20D
MW 20S
BH 14
288
WELL #6
TW2-82
D
BH 16
MW 22
ASPHALT
DURHAM STREET WEST
ASPHALT
COUNTY ROAD #3
286
290

SCALE 1:1500

Date SEPT. 18, 2000

Project 01-3105-1

Golder Associates
LONDON, ONTARIO, CANADA

Drawn WDF

Chkd

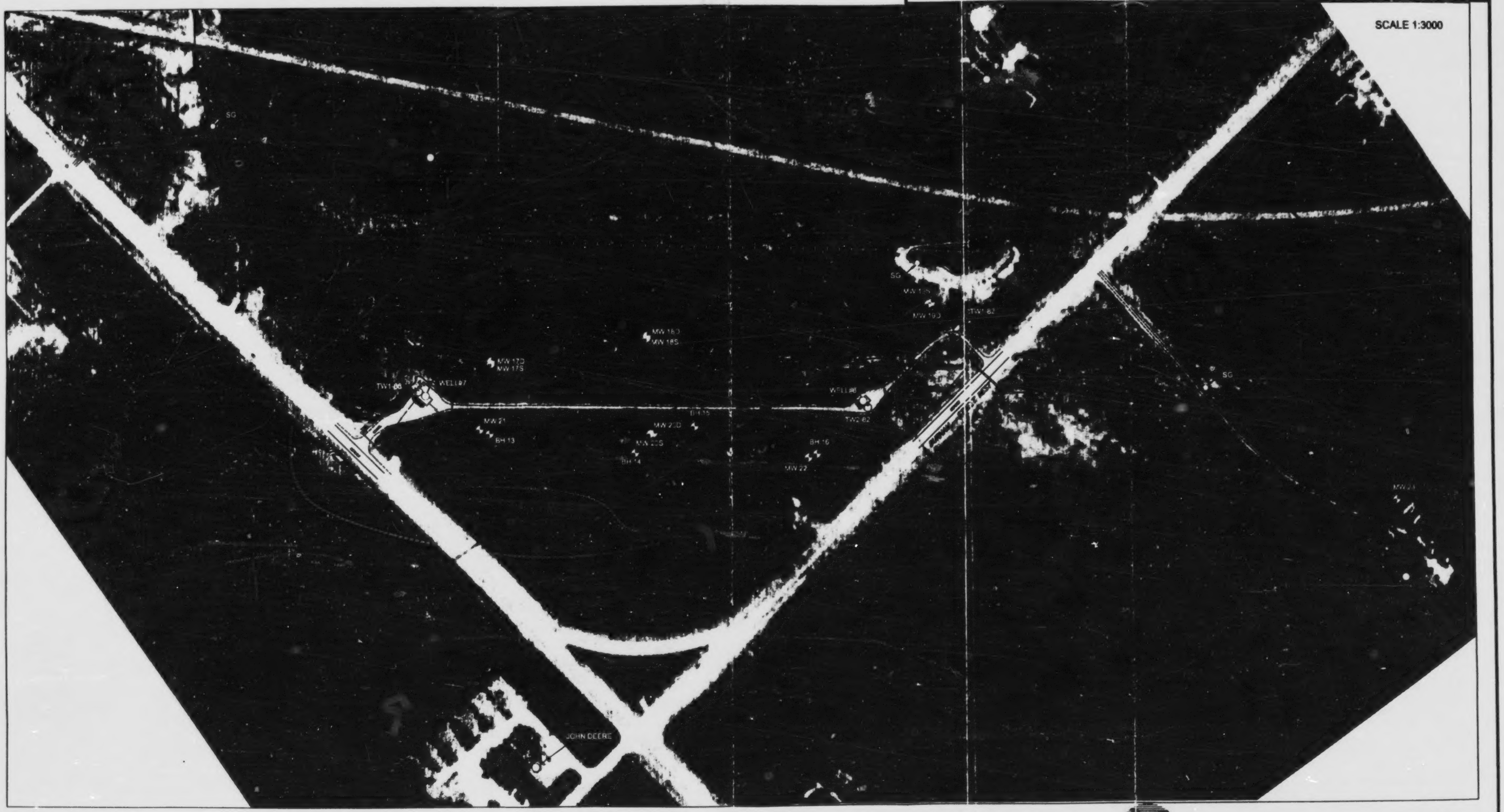
C:\PROJECTS\00_DRFTG\001-3105.-1\003105-1-21.DWG WDF 09/18/00 02:06

REFERENCE
BASE SURVEY SUPPLIED BY
B.M. ROSS AND ASSOCIATES LIMITED

THIS DRAWING IS TO BE READ IN
CONJUNCTION WITH ACCOMPANYING TEXT.

AERIAL PHOTOGRAPH
WELLS 6 & 7 AREA

FIGURE 22


SCALE 1:3000
SG
MW 18D
MW 18S
MW 17D
MW 17S
TW1-86
WELL#7
MW 21
BH 13
BH 15
MW 20D
MW 20S
BH 14
BH 16
MW 22
WELL#8
TW2-82
SG
MW 19S
MW 19D
TW1-82
SG
MW 23
JOHN DEERE

Date SEPT. 18, 2000
Project 001-3105-1

Golder Associates
LONDON, ONTARIO, CANADA

Drawn WDF
Chkd DB

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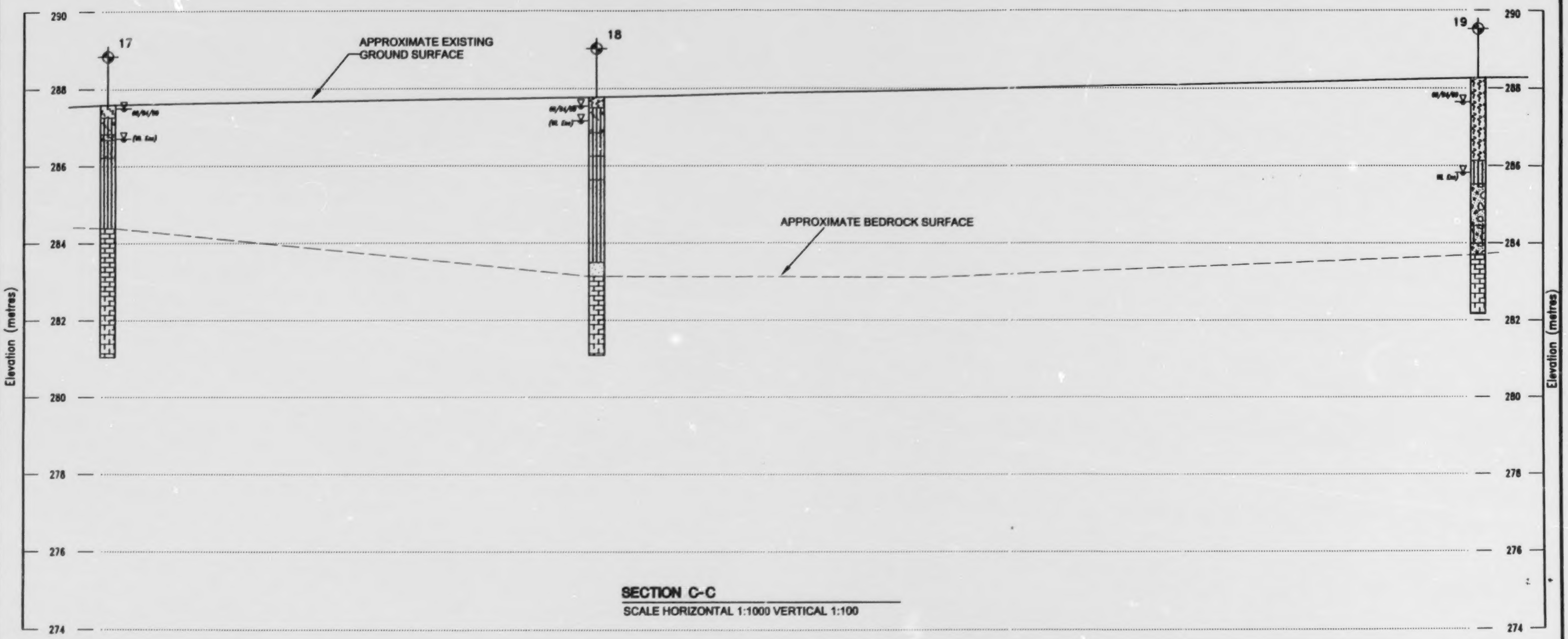
SECTION C-C - WELLS 6 & 7

FIGURE 23

NOTE: THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT



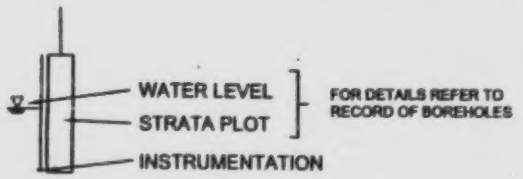
290
288
286
284
282
280
278
276
274
Elevation (metres)
17
18
19
APPROXIMATE EXISTING GROUND SURFACE
APPROXIMATE BEDROCK SURFACE

SECTION C-C

SCALE HORIZONTAL 1:1000 VERTICAL 1:100

LEGEND

⊕ BOREHOLE (Current Investigation)



WATER LEVEL
STRATA PLOT
INSTRUMENTATION
FOR DETAILS REFER TO RECORD OF BOREHOLES

SIMPLIFIED STRATIGRAPHY

- ▨ TOPSOIL
- ▨ ORGANIC SILT
- ▨ PEAT
- ▨ SAND
- ▨ SILTY SAND
- ▨ SILT
- ▨ SANDY SILT
- ▨ SANDY SILT AND GRAVEL
- ▨ SAND AND GRAVEL
- ▨ SILTY SAND AND GRAVEL
- ▨ LIMESTONE BEDROCK

NOTES

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT.

FOR SECTION LOCATION REFER TO FIGURE 21

Date SEPT. 14, 2000

Project 001-3105-1

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Drawn B.G.

Chkd RW

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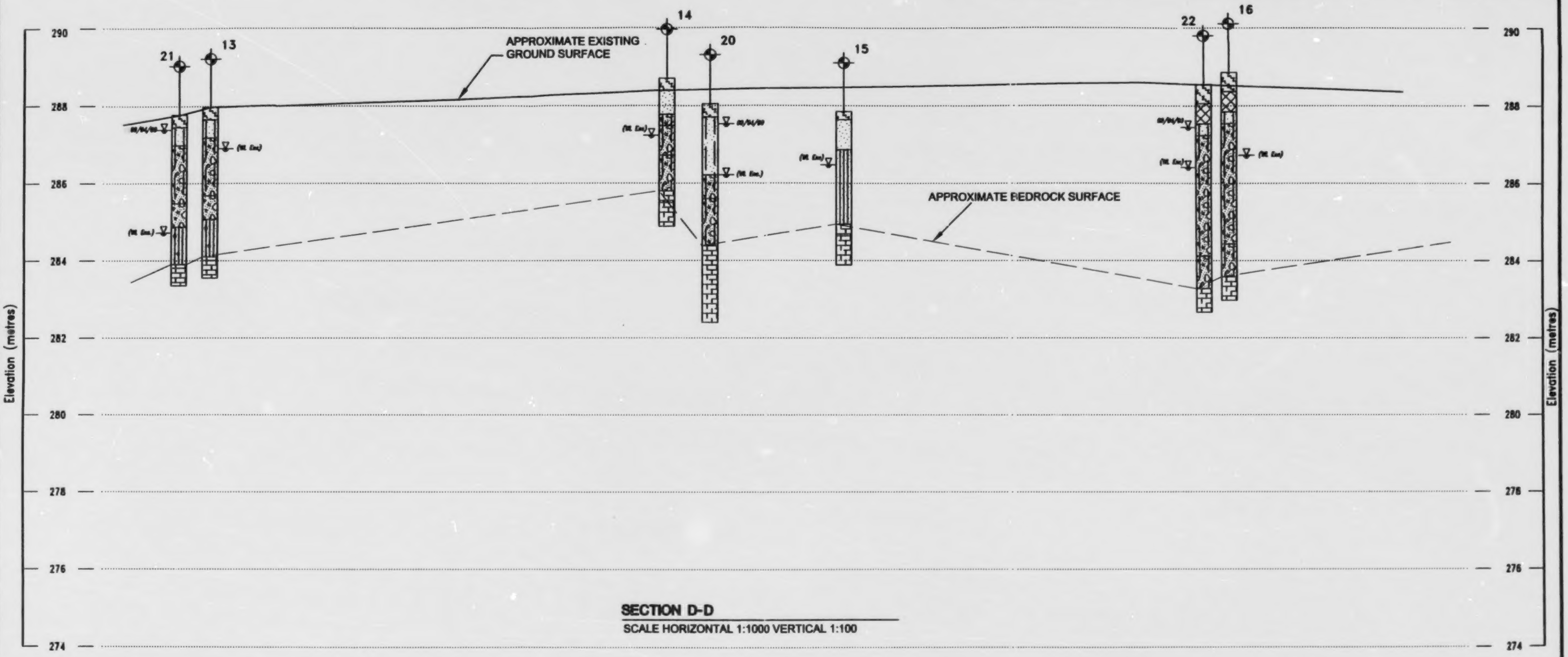
SECTION D-D - WELLS 6 & 7

FIGURE 24

NOTE: THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT



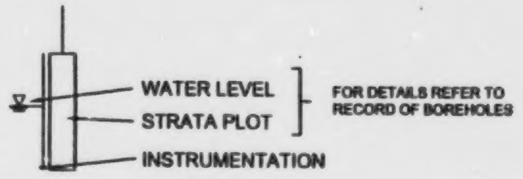
21
13
14
20
15
22
16
APPROXIMATE EXISTING GROUND SURFACE
APPROXIMATE BEDROCK SURFACE
(W. Enc.)
290
288
286
284
282
280
278
276
274
Elevation (metres)

SECTION D-D

SCALE HORIZONTAL 1:1000 VERTICAL 1:100

LEGEND

⊕ BOREHOLE (Current Investigation)



WATER LEVEL
STRATA PLOT
INSTRUMENTATION
FOR DETAILS REFER TO RECORD OF BOREHOLES

SIMPLIFIED STRATIGRAPHY

- ▨ TOPSOIL
- ▩ FILL
- ▒ SAND
- ▒ SILTY SAND
- ▥ SILT
- ▥ SANDY SILT
- ▒ SANDY SILT AND GRAVEL
- ▒ SAND AND GRAVEL
- ▒ SILTY SAND AND GRAVEL
- ▦ LIMESTONE BEDROCK

NOTES

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT.

FOR SECTION LOCATION REFER TO FIGURE 21

Date SEPT. 14, 2000
Project 001-3105-1

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SHALLOW GROUNDWATER
NON-PUMPING CONDITIONS - WELLS 6 & 7

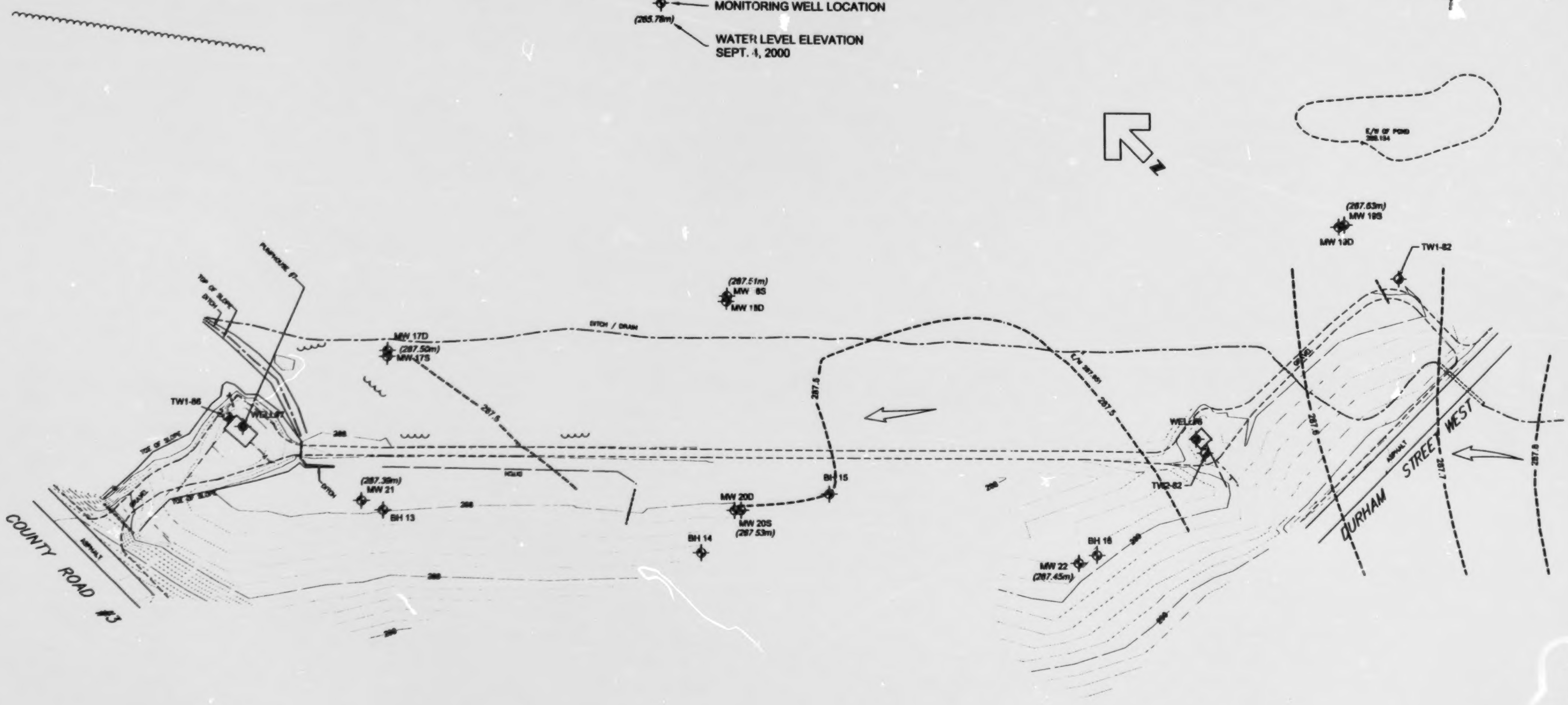
FIGURE 25

REFERENCE
BASE SURVEY SUPPLIED BY
B.M. ROSS AND ASSOCIATES LIMITED

THIS DRAWING IS TO BE READ IN
CONJUNCTION WITH ACCOMPANYING TEXT.

LEGEND

- 288 — INFERRED GROUND WATER ELEVATION CONTOURS (m)
- INFERRED GROUND WATER FLOW DIRECTION
- ⌖ MONITORING WELL LOCATION
- (285.78m) WATER LEVEL ELEVATION SEPT. 4, 2000


N
PUMPHOUSE #7
TOP OF SLOPE
DITCH
TW1-86
WELL #7
TOE OF SLOPE
COUNTY ROAD #3
ASPHALT
288
DITCH / DRAIN
MW 17D
(287.50m)
MW 17S
287.5
ROAD
DITCH
(287.39m)
MW 21
BH 13
(287.51m)
MW 18S
MW 18D
MW 20D
MW 20S
(287.53m)
BH 14
BH 15
E/W OF POND
(287.63m)
MW 19S
MW 19D
TW1-82
WELL #6
TW2-82
BH 16
MW 22
(287.45m)
287.6
287.7
287.8
DURHAM STREET WEST
ASPHALT
C.P. RAIL

SCALE 1:1500

Date SEPT. 18, 2000
Project 001-3105-1

Golder Associates
LONDON, ONTARIO, CANADA

Drawn WDF
Chkd DB

DEEP GROUNDWATER
NON-PUMPING CONDITIONS - WELLS 6 & 7

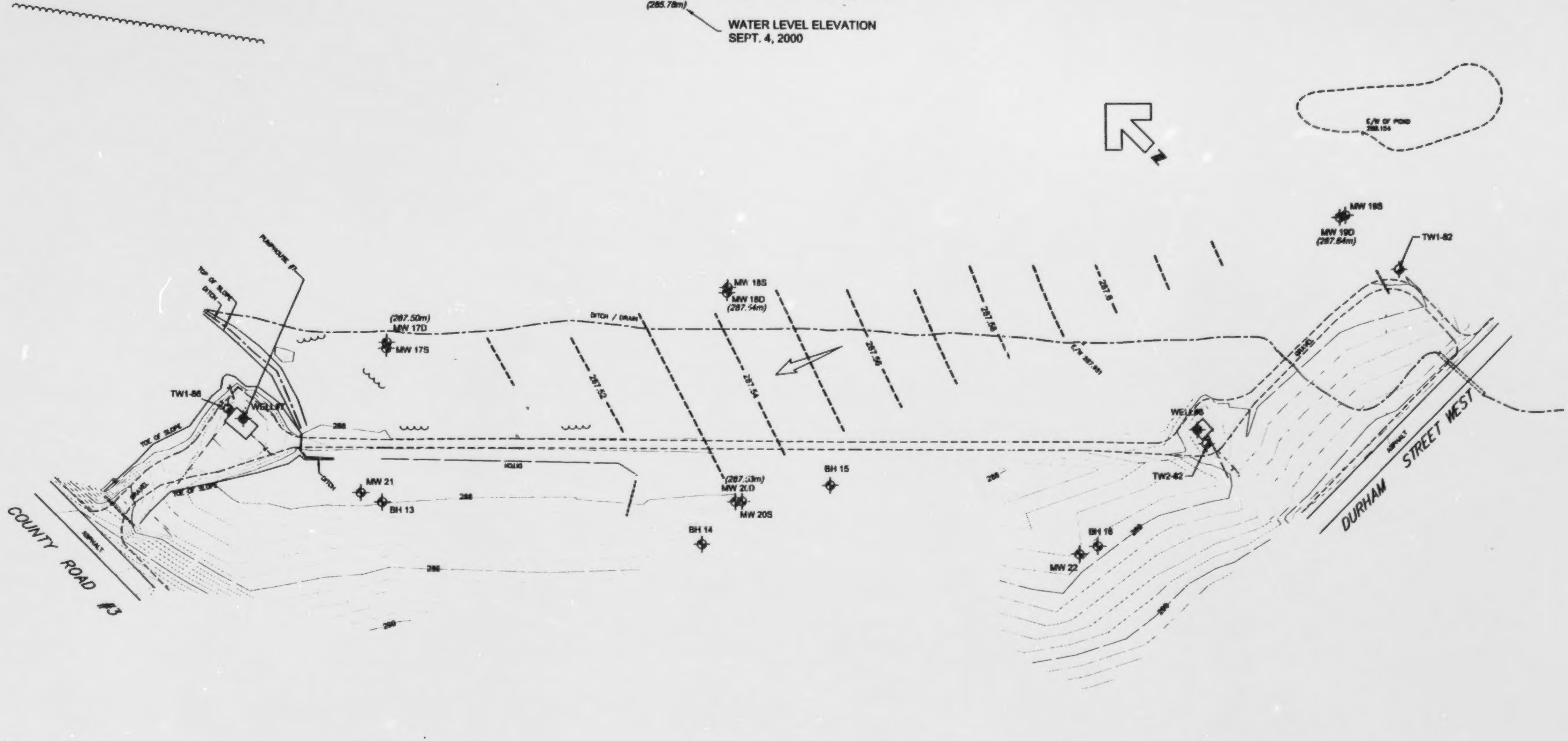
FIGURE 26

REFERENCE
BASE SURVEY SUPPLIED BY
B.M. ROSS AND ASSOCIATES LIMITED

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT.

LEGEND

- 285 — INFERRED GROUND WATER ELEVATION CONTOURS (m)
- INFERRED GROUND WATER FLOW DIRECTION
- MONITORING WELL LOCATION
- (285.78m) — WATER LEVEL ELEVATION SEPT. 4, 2000



PUMPHOUSE
TOP OF SLOPE
DITCH
(287.50m)
MW 17D
MW 17S
DITCH / DRAIN
MW 18S
MW 18D
(287.54m)
TW1-86
WELL #7
288
TOE OF SLOPE
DITCH
287.52
287.54
287.56
287.58
287.6
MW 21
BH 13
(287.53m)
MW 20D
MW 20S
BH 14
BH 15
COUNTY ROAD #3
ASPHALT
GRAVEL
N
E/W OF POND
MW 19S
MW 19D
(287.64m)
TW1-82
WELL #6
TW2-82
BH 16
MW 22
DURHAM STREET WEST
290

SCALE 1:1500

Date SEPT. 18, 2000
Project 001-3105-1

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SHALLOW GROUNDWATER @ 24HRS
WELLS 6 & 7

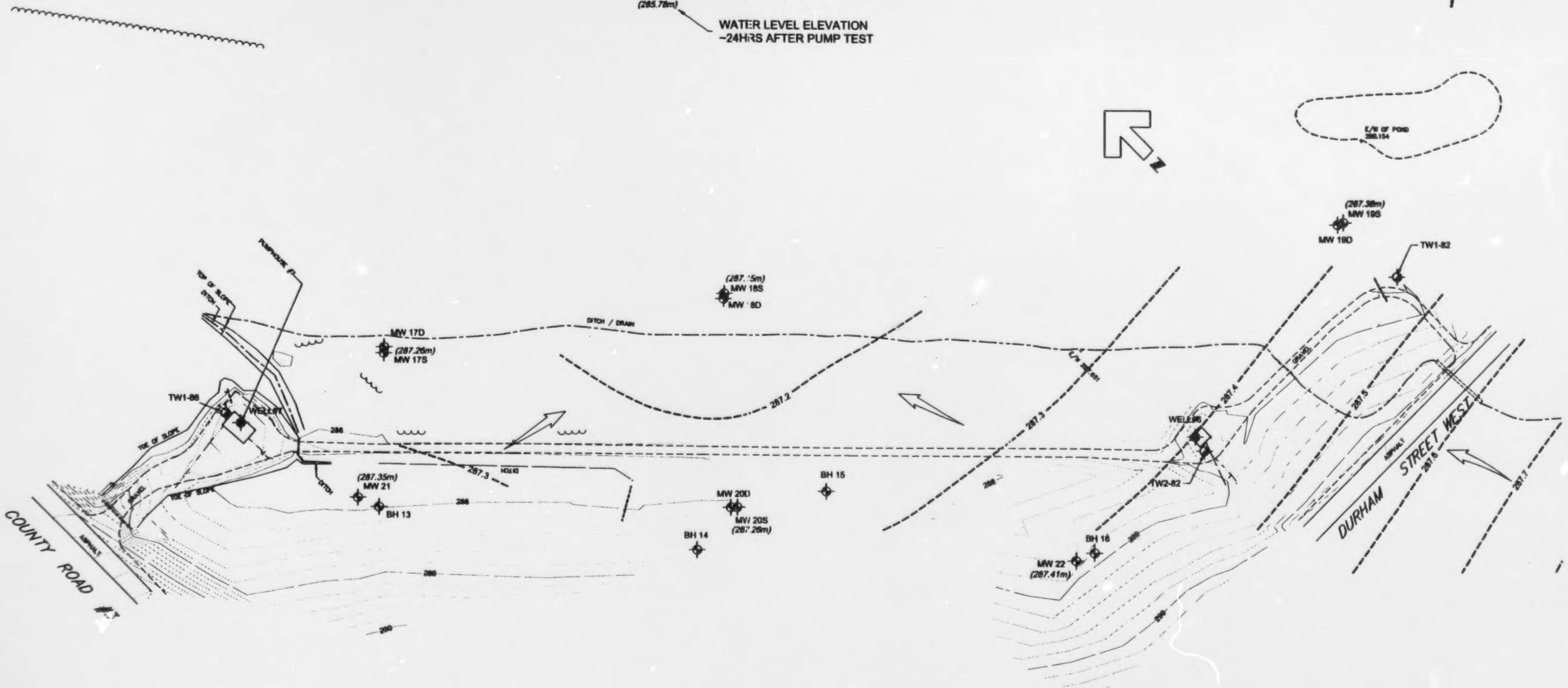
FIGURE 27

REFERENCE
BASE SURVEY SUPPLIED BY
B.M. ROSS AND ASSOCIATES LIMITED

THIS DRAWING IS TO BE READ IN
CONJUNCTION WITH ACCOMPANYING TEXT.

LEGEND

285 INFERRED GROUND WATER ELEVATION CONTOURS (m)
INFERRED GROUND WATER FLOW DIRECTION
MONITORING WELL LOCATION
(285.78m) WATER LEVEL ELEVATION ~24HRS AFTER PUMP TEST



E/W OF POND 288.154
N
(287.38m)
MW 19S
MW 19D
TW1-82
(287.15m)
MW 18S
MW 18D
TOP OF SLOPE
DITCH
PUMPHOUSE
MW 17D
(287.26m)
MW 17S
DITCH / DRAIN
287.2
287.3
287.4
287.5
287.6
287.7
TW1-86
WELL #7
TOE OF SLOPE
286
DITCH
(287.35m)
MW 21
BH 13
BH 15
MW 20D
MW 20S
(287.26m)
BH 14
WELL #6
TW2-82
BH 16
MW 22
(287.41m)
GRAVEL
ASPHALT
DURHAM STREET WEST
COUNTY ROAD
280

SCALE 1:1500

Date SEPT. 18, 2000
Project 001-3105-1

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LONDON, ONTARIO, CANADA

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Chkd WB

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DEEP GROUNDWATER @ 24HRS

WELLS 6 & 7

FIGURE 28

REFERENCE

BASE SURVEY SUPPLIED BY
B.M. ROSS AND ASSOCIATES LIMITED

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT.

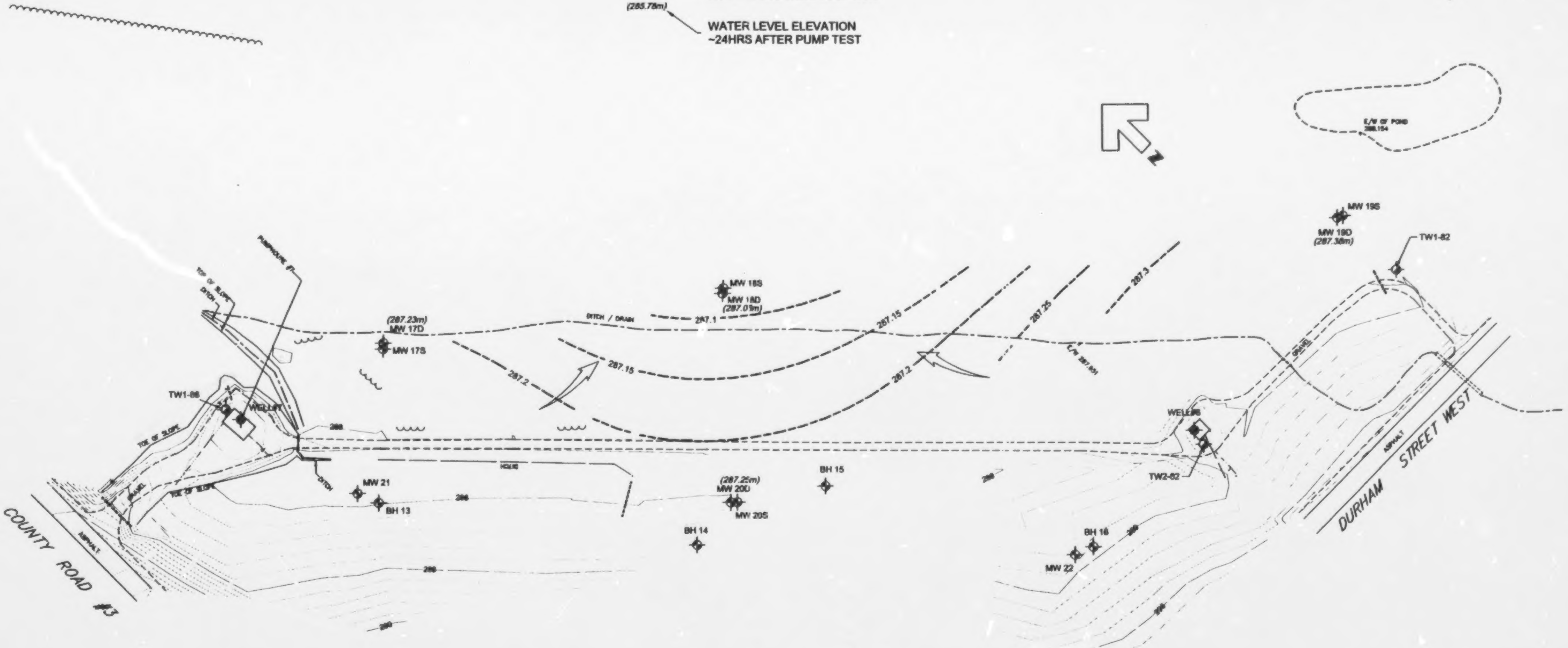
LEGEND

285 — INFERRED GROUND WATER ELEVATION CONTOURS (m)

INFERRED GROUND WATER FLOW DIRECTION

MONITORING WELL LOCATION

(285.78m) — WATER LEVEL ELEVATION ~24HRS AFTER PUMP TEST



TOP OF SLOPE
DITCH
PUMPHOUSE #1
TW1-86
WELL #7
TOE OF SLOPE
(287.23m)
MW 17D
MW 17S
DITCH / DRAIN
MW 18S
MW 18D
(287.09m)
287.1
287.15
287.2
287.25
287.3
E/W 287.851
288
HOUSE
DITCH
MW 21
BH 13
(287.25m)
MW 20D
MW 20S
BH 15
BH 14
289
290
COUNTY ROAD #3
ASPHALT
E/W OF POND 288.154
N
MW 19S
MW 19D
(287.38m)
TW1-82
GRAVEL
WELL #6
TW2-82
BH 16
MW 22
ASPHALT
DURHAM STREET WEST
(C/L RAIL BED)

SCALE 1:1500

Date SEPT. 18, 2000

Project 001-3105-1

Golder Associates
LONDON, ONTARIO, CANADA

Drawn WDF

Chkd DB

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NITRATE + NITRITE IN GROUNDWATER

WELLS 6 & 7

FIGURE 29

REFERENCE
BASE SURVEY SUPPLIED BY
B.M. ROSS AND ASSOCIATES LIMITED

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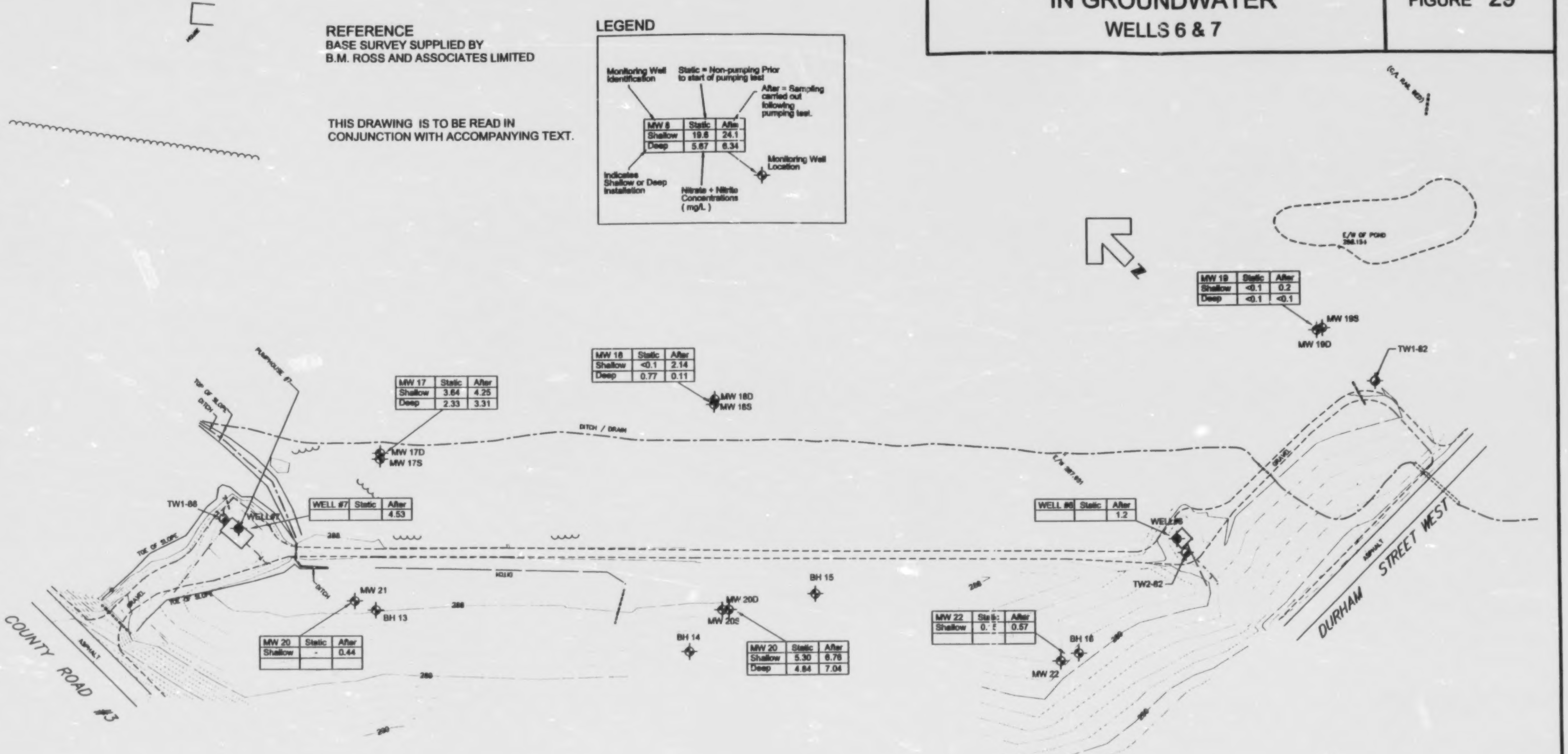
LEGEND
Monitoring Well Identification
Static = Non-pumping Prior to start of pumping test
After = Sampling carried out following pumping test.
MW 8 | Static | After
Shallow | 19.6 | 24.1
Deep | 5.67 | 6.34
Indicates Shallow or Deep Installation
Nitrate + Nitrite Concentrations (mg/L)
Monitoring Well Location
N
E/W OF POND 288.134
(C.A. RAIL BED)
MW 19 | Static | After
Shallow | <0.1 | 0.2
Deep | <0.1 | <0.1
MW 19S
MW 19D
TW1-82
MW 18 | Static | After
Shallow | <0.1 | 2.14
Deep | 0.77 | 0.11
MW 18D
MW 18S
MW 17 | Static | After
Shallow | 3.64 | 4.25
Deep | 2.33 | 3.31
MW 17D
MW 17S
PUMPHOUSE #7
TOP OF SLOPE
DITCH
DITCH / DRAIN
TW1-86
WELL #7
WELL #7 | Static | After
4.53
TOE OF SLOPE
GRAVEL
288
DITCH
WELL #6 | Static | After
1.2
WELL #6
TW2-82
GRAVEL
ASPHALT
DURHAM STREET WEST
MW 21
BH 13
MW 20 | Static | After
Shallow | - | 0.44
MW 20D
MW 20S
BH 14
BH 15
MW 20 | Static | After
Shallow | 5.30 | 6.76
Deep | 4.84 | 7.04
MW 22 | Static | After
Shallow | 0.5 | 0.57
BH 16
MW 22
COUNTY ROAD #3
ASPHALT
288
290

SCALE 1:1500

Date SEPT. 18, 2000
Project 001-3105-1

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Chkd Ab

ORGANIC NITROGEN IN GROUNDWATER

WELLS 6 & 7

FIGURE 30

REFERENCE
BASE SURVEY SUPPLIED BY
B.M. ROSS AND ASSOCIATES LIMITED

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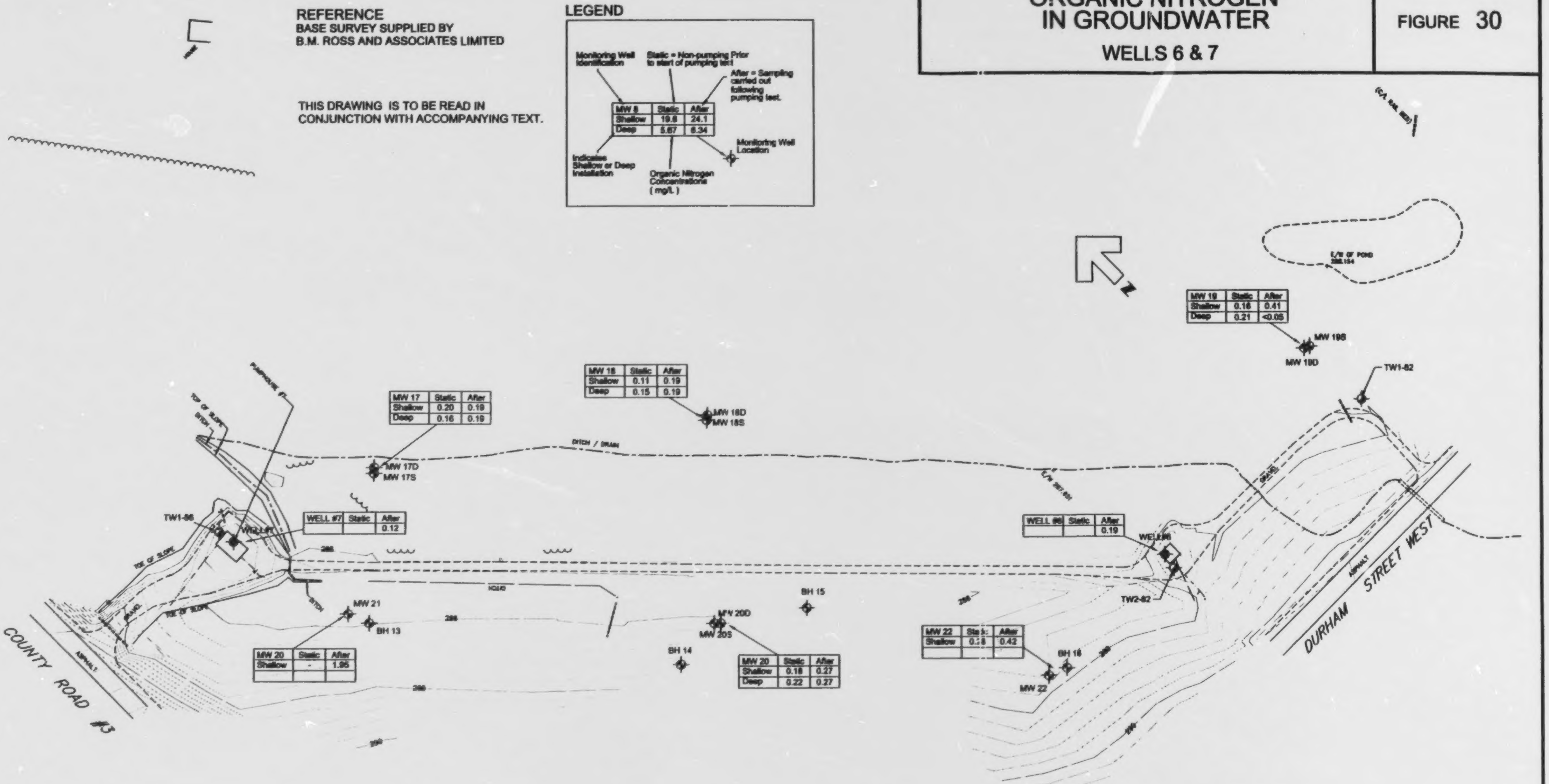
LEGEND
Monitoring Well Identification
Static = Non-pumping Prior to start of pumping test
After = Sampling carried out following pumping test.
MW 8 | Static | After
Shallow | 19.6 | 24.1
Deep | 5.67 | 6.34
Indicates Shallow or Deep Installation
Organic Nitrogen Concentrations (mg/L)
Monitoring Well Location
MW 17 | Static | After
Shallow | 0.20 | 0.19
Deep | 0.16 | 0.19
MW 17D
MW 17S
MW 18 | Static | After
Shallow | 0.11 | 0.19
Deep | 0.15 | 0.19
MW 18D
MW 18S
MW 19 | Static | After
Shallow | 0.16 | 0.41
Deep | 0.21 | <0.05
MW 19S
MW 19D
TW1-82
WELL #7 | Static | After
0.12
WELL #6 | Static | After
0.19
TW1-86
WELL #7
WELL #6
TW2-82
MW 20 | Static | After
Shallow | - | 1.95
MW 21
BH 13
MW 20D
MW 20S
BH 14
BH 15
MW 20 | Static | After
Shallow | 0.18 | 0.27
Deep | 0.22 | 0.27
MW 22 | Static | After
Shallow | 0.[illegible]8 | 0.42
BH 16
MW 22
DITCH / DRAIN
TOE OF SLOPE
TOP OF SLOPE
DITCH
PUMPHOUSE #7
ASPHALT
COUNTY ROAD #3
DURHAM STREET WEST
N
298
290

SCALE 1:1500

Date SEPT. 18, 2000
Project 001-3105-1

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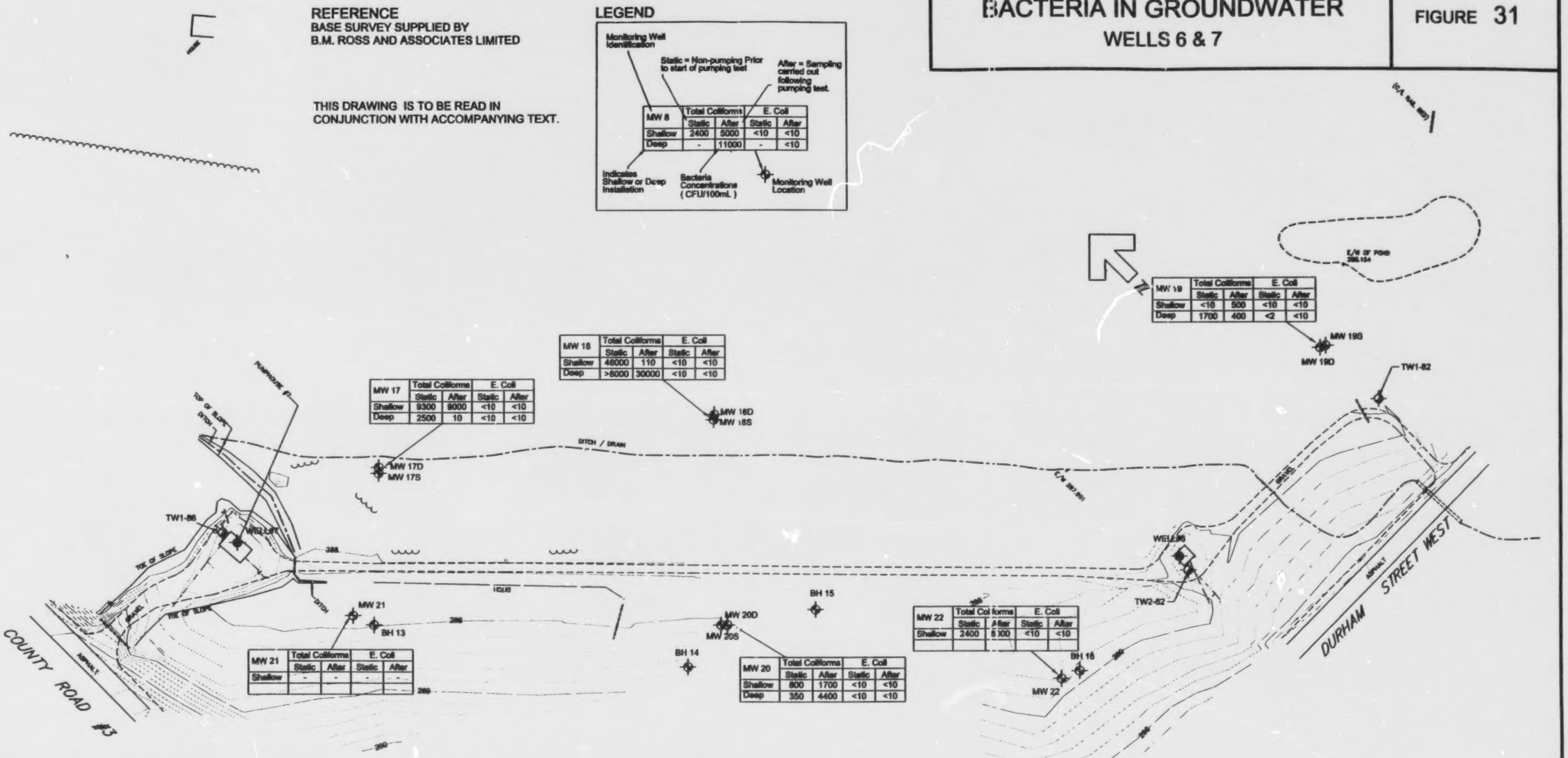
Chkd DB

BACTERIA IN GROUNDWATER
WELLS 6 & 7

FIGURE 31

REFERENCE
BASE SURVEY SUPPLIED BY
B.M. ROSS AND ASSOCIATES LIMITED

THIS DRAWING IS TO BE READ IN
CONJUNCTION WITH ACCOMPANYING TEXT.


PUMPHOUSE #7
TOP OF SLOPE
DITCH
TW1-86
WELL #7
TOE OF SLOPE
DITCH / DRAIN
MW 17D
MW 17S
MW 18D
MW 18S
MW 19S
MW 19D
TW1-82
WELL #6
TW2-82
MW 21
BH 13
BH 14
BH 15
BH 16
MW 20D
MW 20S
MW 22
COUNTY ROAD #3
DURHAM STREET WEST
ASPHALT
288
290

LEGEND

Monitoring Well Identification

Static = Non-pumping Prior to start of pumping test

After = Sampling carried out following pumping test.

MW 8	Total Coliforms		E. Coli	
	Static	After	Static	After
Shallow	2400	5000	<10	<10
Deep	-	11000	-	<10

Indicates Shallow or Deep Installation

Bacteria Concentrations (CFU/100mL)

Monitoring Well Location

MW 17	Total Coliforms		E. Coli	
	Static	After	Static	After
Shallow	9300	9000	<10	<10
Deep	2500	10	<10	<10

MW 18	Total Coliforms		E. Coli	
	Static	After	Static	After
Shallow	46000	110	<10	<10
Deep	>8000	30000	<10	<10

MW 19	Total Coliforms		E. Coli	
	Static	After	Static	After
Shallow	<10	500	<10	<10
Deep	1700	400	<2	<10

MW 21	Total Coliforms		E. Coli	
	Static	After	Static	After
Shallow	-	-	-	-

MW 20	Total Coliforms		E. Coli	
	Static	After	Static	After
Shallow	800	1700	<10	<10
Deep	350	4400	<10	<10

MW 22	Total Coliforms		E. Coli	
	Static	After	Static	After
Shallow	2400	8000	<10	<10

SCALE 1:1500

Date SEPT. 18, 2000
Project 001-3105-1

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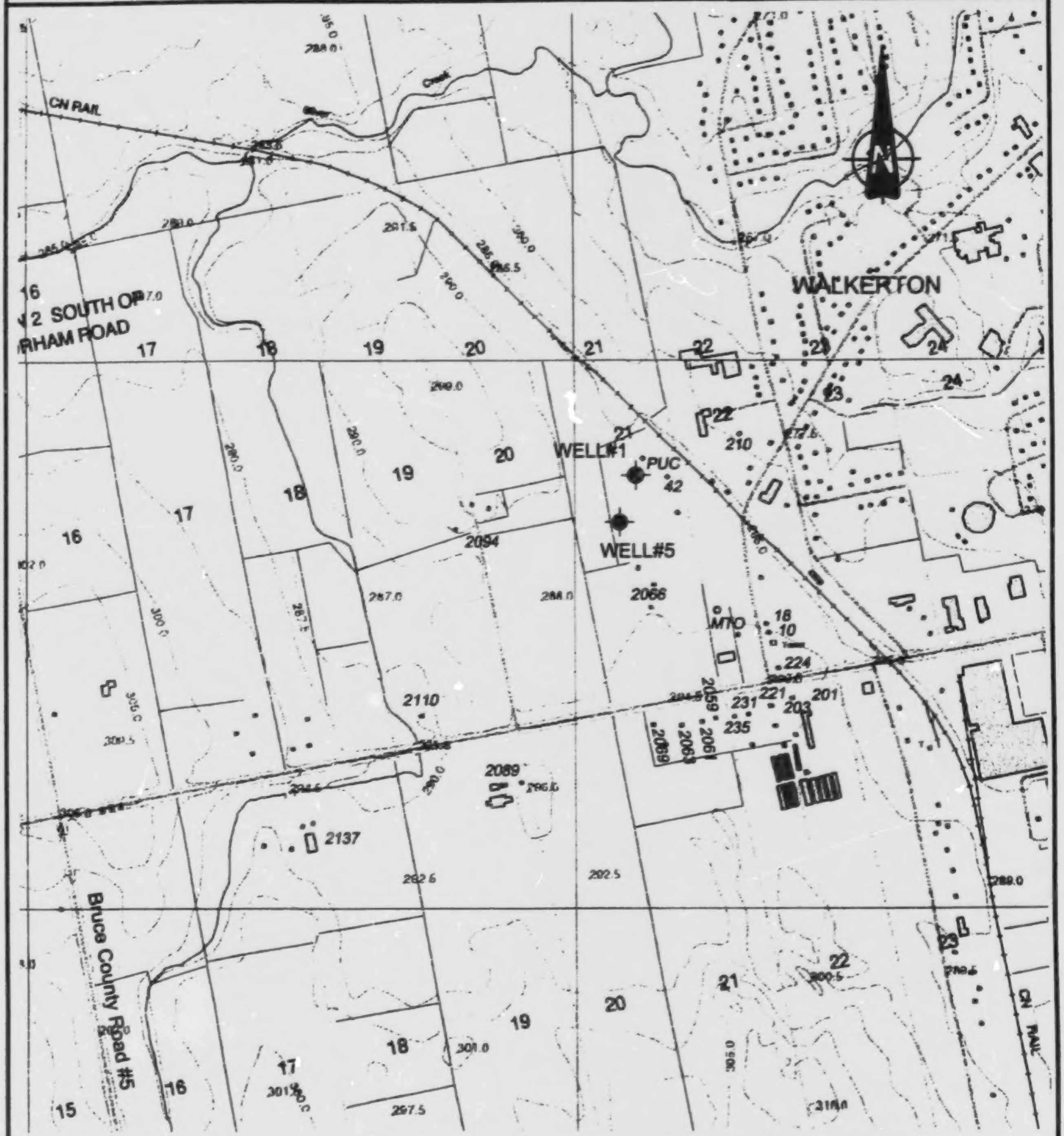
LAND USE REFERENCE MAP
WELL 5

FIGURE 32


CN RAIL
Creek
WALKERTON
WELL#1
PUC
42
WELL#5
2094
2066
MTO
18
10
224
221
203
201
231
235
2059
2061
2063
2069
2110
2089
2137
Bruce County Road #5
2 SOUTH OF
RHAM ROAD
16
17
18
19
20
21
22
23
24
15
CN RAIL

REFERENCE
1:10000 TOPOGRAPHIC MAPPING
PROVIDED BY THE
MINISTRY OF NATURAL RESOURCES
ONTARIO

SCALE 1:10000

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CONJUNCTION WITH ACCOMPANYING TEXT.

Date SEPT. 18, 2000
Project 001-3105-1

Golder Associates
LONDON, ONTARIO, CANADA

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Chkd Ob

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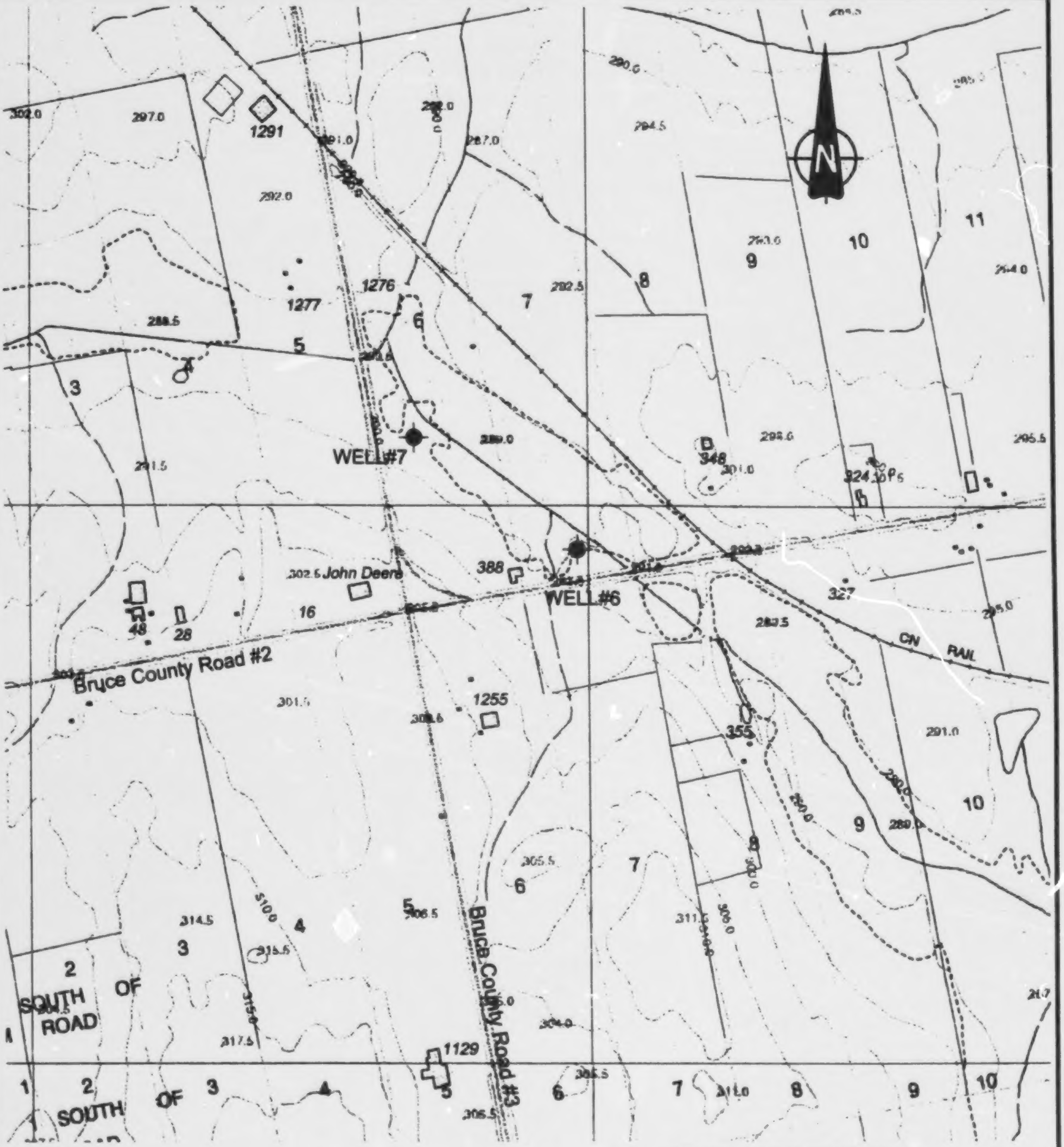
LAND USE REFERENCE MAP
WELLS 6 & 7

FIGURE 33



WELL#7
WELL#6
John Deere
Bruce County Road #2
Bruce County Road #3
CN RAIL
N
SOUTH OF ROAD
SOUTH OF
1291
1276
1277
348
324
327
388
355
1255
1129
48
28
16
302.0
297.0
292.0
291.0
288.5
291.5
289.0
292.5
294.5
293.0
290.0
295.5
294.0
302.5
301.5
305.5
306.5
314.5
315.5
317.5
311.5
304.0
291.0
289.0
1
2
3
4
5
6
7
8
9
10
11

REFERENCE
1:10000 TOPOGRAPHIC MAPPING
PROVIDED BY THE
MINISTRY OF NATURAL RESOURCES
ONTARIO

SCALE 1:10000

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Date SEPT. 18, 2000

Project 001-3105-1

Drawn WDF

Chkd DB

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APPENDIX A

RECORDS OF BOREHOLE SHEETS

LIST OF ABBREVIATIONS

The abbreviations commonly employed on each "Record of Borehole", on the figures and in the text of the report, are as follows:

I. SAMPLE TYPES

AS	auger sample
CS	chunk sample
DO	drive open
DS	Denison type sample
FS	foil sample
RC	rock core
ST	slotted tube
TO	thin-walled, open
TP	thin-walled, piston
WS	wash sample

II. PENETRATION RESISTANCES

Dynamic Penetration Resistance:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) to drive uncased a 50 mm (2 in.) diameter, 60° cone attached to "A" size drill rods for a distance of 0.3 m (12 in.).

Standard Penetration Resistance, N:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) required to drive a 50 mm (2 in.) drive open sampler for a distance of 0.3 m (12 in.).

WH	sampler advanced by static weight-weight, hammer
PH	sampler advanced by hydraulic force
PM	sampler advanced by manual force

III. SOIL DESCRIPTION

(a) *Cohesionless Soils*

Relative Density	"N" Blows/0.3 m or Blow/ft.
Very loose	0 to 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very dense	over 50

(b) *Cohesive Soils*

	"Cu"	
Consistency	kPa	psf.
Very soft	0 to 12	0 to 250
Soft	12 to 25	250 to 500
Firm	25 to 50	500 to 1000
Stiff	50 to 100	1000 to 2000
Very stiff	100 to 200	2000 to 4000
Hard	over 200	over 4000

IV. SOIL TESTS

C	consolidation test
H	hydrometer analysis
M	sieve analysis
MH	combined analysis, sieve and hydrometer [1]
Q	undrained triaxial [2]
R	consolidated undrained triaxial [2]
S	drained triaxial
U	unconfined compression
V	field vane test
Chem	chemical analysis

NOTES:

1. Combined analyses when 5 to 95 per cent of the material passes the No. 200 sieve.
2. Undrained triaxial tests in which pore pressures are measured are shown as Q or R.

LIST OF SYMBOLS

I. GENERAL

$\pi = 3.1416$

e = base of natural logarithms 2.7183

$\log_e$ a or ln a, natural logarithm of a

$\log_{10}$ a or log a, logarithm of a to base 10

t	time
g	acceleration due to gravity
V	volume
W	weight
m	mass
M	moment
F	factor of safety

II. STRESS AND STRAIN

u	pore pressure
σ	normal stress
σ'	normal effective stress (σ is also used)
τ	shear stress
ε	linear strain
ε_{sy}	shear strain
υ	Poisson's ration (μ is also used)
E	modulus of linear deformation (Young's modulus)
G	modulus of shear deformation
K	modulus of compressibility
η	coefficient of viscosity

III. SOIL PROPERTIES

(a) *Unit weight*

γ	unit weight of soil (bulk density)
γ_s	unit weight of solid particles
γ_w	unit weight of water
γ_d	unit dry weight of soil (dry density)
γ'	unit weight of submerged soil
G_s	specific gravity of solid particles $G_s = \gamma_s/\gamma_w$
e	void ratio
n	porosity
w	water content
S_r	degree of saturation

(b) *Consistency*

w_L	liquid limit
w_P	plastic limit
I_P	plasticity index
w_S	shrinkage limit
I_L	liquidity index = $(w - w_p)I_p$
I_C	consistency index - $(w_L - w)/I_p$
e_{max}	void ratio in loosest state
e_{min}	void ratio in densest state
D_r	relative density = $(e_{max} - e)/(e_{max} - e_{min})$

(c) *Permeability*

h	hydraulic head or potential
q	rate of discharge
v	velocity of flow
i	hydraulic gradient
κ	coefficient of permeability
j	seepage force per unit volume

(d) *Consolidation (one-dimensional)*

m_v	coefficient of volume change $= -\Delta e/(1+e)\Delta\sigma'$
C_c	compression index $= -\Delta e/\Delta\log_{10}\sigma'$
c_v	coefficient of consolidation
T_F	time factor $= c_v t/d^2$ (d, drainage path)
U	degree of consolidation

(e) *Shear strength*

τ_f	shear strength	in terms of effective stress $\tau_f = c' + \sigma' \tan\phi$
c'	effective cohesion intercept	
ϕ'	effective ang[illegible] shearing resistance, or friction	
c_u	apparent cohesion*	in terms of total stress $\tau_f = cu + \sigma \tan\phi_u$
ϕ_u	apparent angle of shearing resistance, or friction	
μ	coefficient of friction	
S_t	sensitivity	

---

*For the case of a saturated cohesive soil, $\phi_u = 0$ and the undrained shear strength $\tau_f = c_u$ is taken as half the undrained compressive strength.

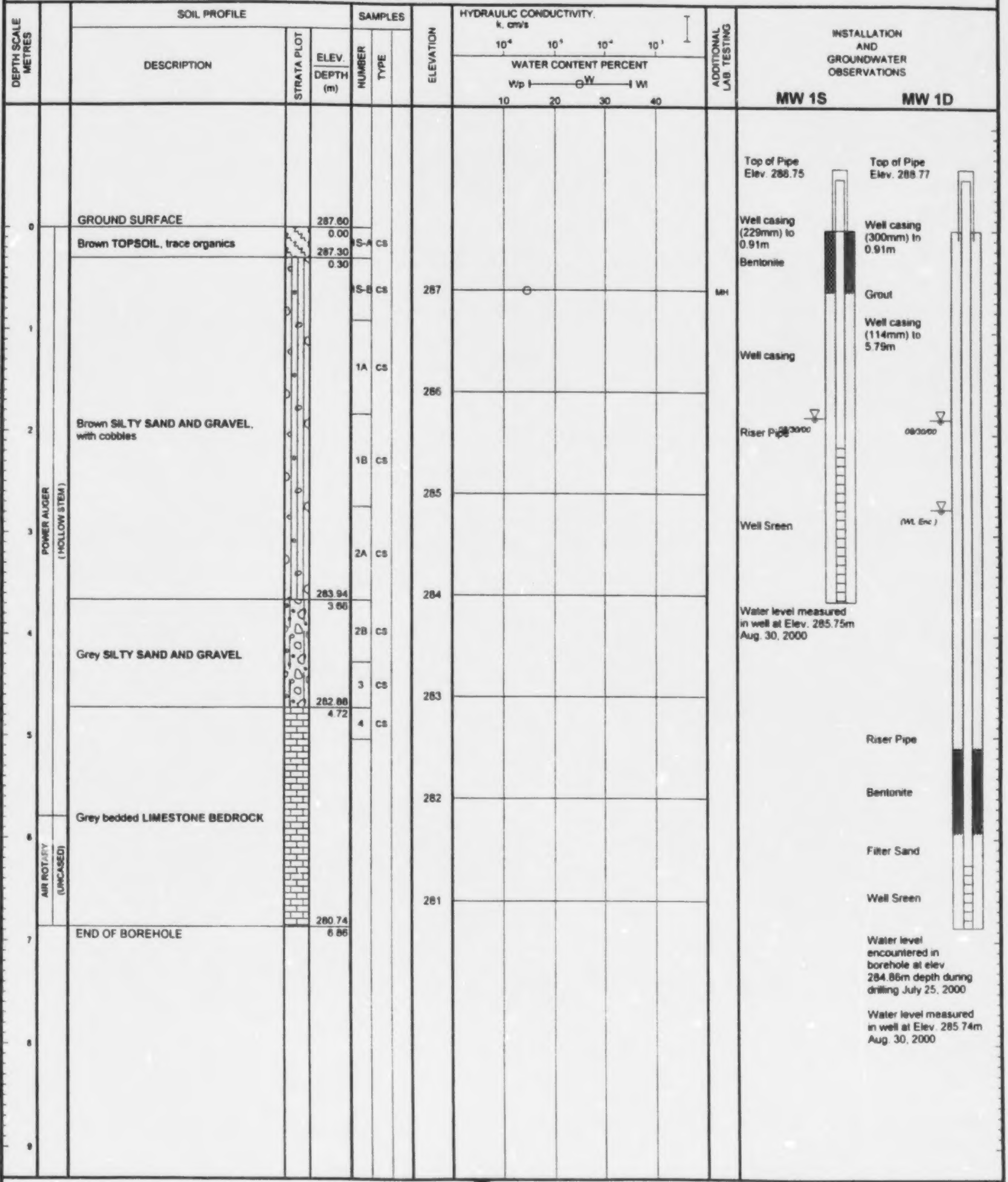
PROJECT: 001-3105-1

LOCATION: - SEE LOCATION PLAN -

RECORD OF BOREHOLE 1

SHEET 1 OF 1

DATUM GEODETIC


DEPTH SCALE METRES
0
1
2
3
4
5
6
7
8
9
POWER AUGER
(HOLLOW STEM)
AIR ROTARY
(UNCASED)
STRATA PLOT
ELEVATION
287
286
285
284
283
282
281
HYDRAULIC CONDUCTIVITY, k, cm/s
10^{-6}
10^{-5}
10^{-4}
10^{-3}
WATER CONTENT PERCENT
Wp
W
Wl
10
20
30
40
ADDITIONAL LAB TESTING
MH
INSTALLATION AND GROUNDWATER OBSERVATIONS
MW 1S
MW 1D
Top of Pipe Elev. 288.75
Well casing (229mm) to 0.91m
Bentonite
Well casing
Riser Pipe
08/30/00
Well Sreen
Water level measured in well at Elev. 285.75m Aug. 30, 2000
Top of Pipe Elev. 288.77
Well casing (300mm) to 0.91m
Grout
Well casing (114mm) to 5.79m
08/30/00
(WL Enc.)
Riser Pipe
Bentonite
Filter Sand
Well Sreen
Water level encountered in borehole at elev 284.88m depth during drilling July 25, 2000
Water level measured in well at Elev. 285.74m Aug. 30, 2000

SOIL PROFILE DESCRIPTION	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE
GROUND SURFACE	287.60		
Brown TOPSOIL, trace organics	0.00	1S-A	CS
	287.30 0.30		
Brown SILTY SAND AND GRAVEL, with cobbles		1S-B	CS
		1A	CS
		1B	CS
		2A	CS
	283.94 3.66		
Grey SILTY SAND AND GRAVEL		2B	CS
		3	CS
	282.88 4.72	4	CS
Grey bedded LIMESTONE BEDROCK			
	280.74 6.86		
END OF BOREHOLE			

DEPTH SCALE

1 : 50

Golder Associates

LOGGED T.P.

CHECKED RW

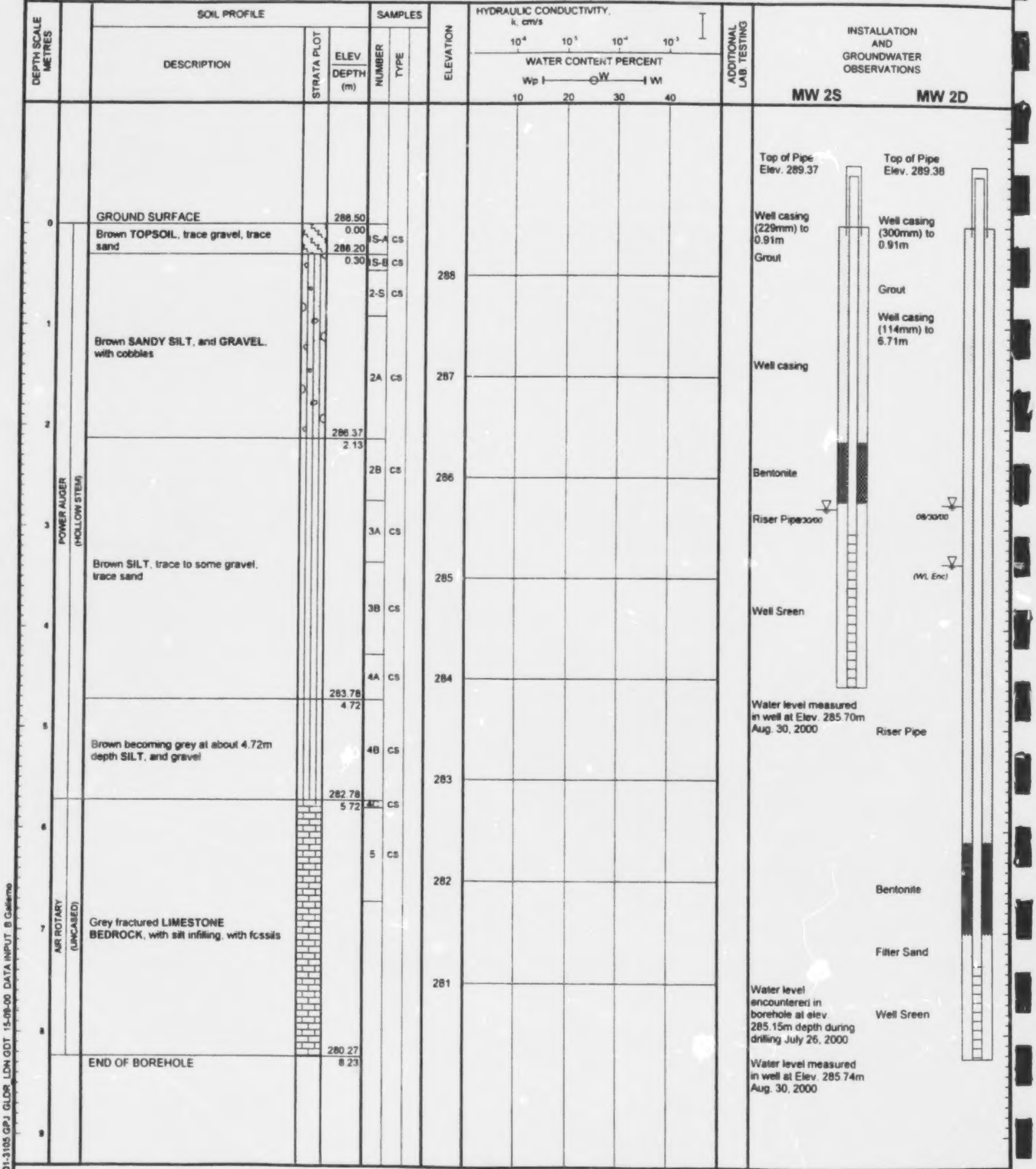
PROJECT: 001-3105-1

LOCATION: - SEE LOCATION PLAN -

RECORD OF BOREHOLE 2

SHEET 1 OF 1

DATUM: GEODETIC



DEPTH SCALE METRES
BORING METHOD
SOIL PROFILE
SAMPLES
ELEVATION
HYDRAULIC CONDUCTIVITY, k, cm/s
10⁻⁶ 10⁻⁵ 10⁻⁴ 10⁻³
WATER CONTENT PERCENT
Wp W Wl
10 20 30 40
288 287 286 285 284 283 282 281
ADDITIONAL LAB. TESTING
INSTALLATION AND GROUNDWATER OBSERVATIONS
MW 2S
MW 2D
Top of Pipe Elev. 289.37
Well casing (229mm) to 0.91m
Grout
Well casing
Bentonite
Riser Pipe
08/30/00
Well Sreen
Water level measured in well at Elev. 285.70m Aug. 30, 2000
Water level encountered in borehole at elev. 285.15m depth during drilling July 26, 2000
Water level measured in well at Elev. 285.74m Aug. 30, 2000
Top of Pipe Elev. 289.38
Well casing (300mm) to 0.91m
Grout
Well casing (114mm) to 6.71m
08/30/00
(WL Enc)
Riser Pipe
Bentonite
Filter Sand
Well Sreen

BORING METHOD	DESCRIPTION	ELEV / DEPTH (m)	NUMBER	TYPE
	GROUND SURFACE	288.50 0.00		
POWER AUGER (HOLLOW STEM)	Brown **TOPSOIL**, trace gravel, trace sand	288.20 0.30	1S-A	CS
	Brown **SANDY SILT**, and **GRAVEL**, with cobbles	286.37 2.13	1S-B 2-S 2A	CS CS CS
	Brown SILT, trace to some gravel, trace sand	283.78 4.72	2B 3A 3B 4A	CS CS CS CS
	Brown becoming grey at about 4.72m depth SILT, and gravel	282.78 5.72	4B 4C	CS CS
AIR ROTARY (UNCASED)	Grey fractured **LIMESTONE BEDROCK**, with silt infilling, with fossils	280.27 8.23	5	CS
	END OF BOREHOLE			

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: T.P.

CHECKED: RW

LDN_ENV 001-3105.GPJ GLDR_LDN.GDT 15-09-00 DATA INPUT: B Galiano

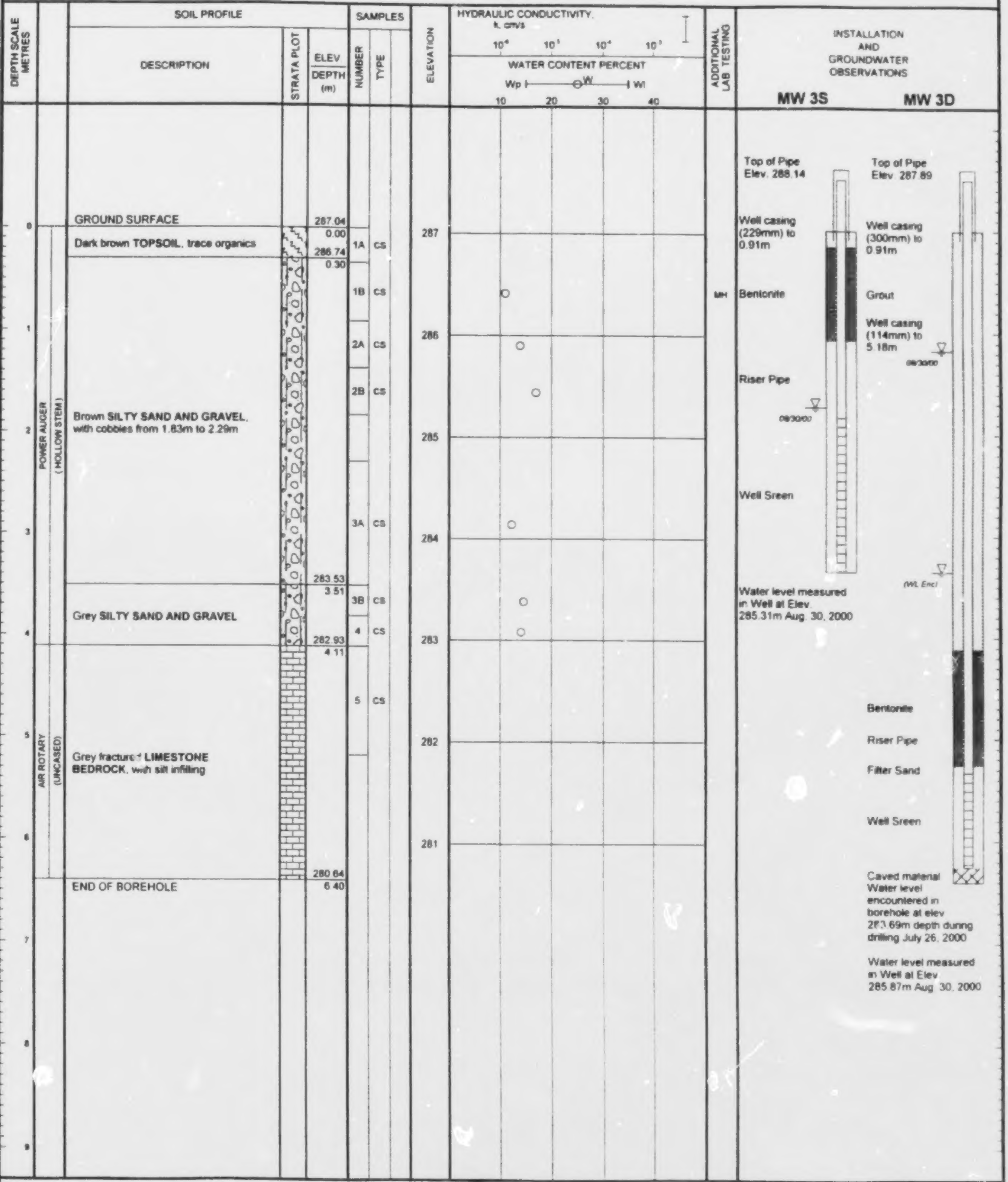
PROJECT: 001-3105-1

LOCATION: - SEE LOCATION PLAN -

RECORD OF BOREHOLE 3

SHEET 1 OF 1

DATUM GEODETIC


DEPTH SCALE METRES
SOIL PROFILE
DESCRIPTION
STRATA PLOT
ELEV
DEPTH (m)
SAMPLES
NUMBER
TYPE
ELEVATION
HYDRAULIC CONDUCTIVITY, k, cm/s
10^{-6}
10^{-5}
10^{-4}
10^{-3}
WATER CONTENT PERCENT
Wp
W
Wl
10
20
30
40
ADDITIONAL LAB TESTING
INSTALLATION AND GROUNDWATER OBSERVATIONS
MW 3S
MW 3D
0
1
2
3
4
5
6
7
8
9
287
286
285
284
283
282
281
POWER AUGER
(HOLLOW STEM)
AIR ROTARY
(UNCASED)
MH
08/30/00
08/30/00
(WL Enc)

DESCRIPTION	ELEV / DEPTH (m)	SAMPLES NUMBER	TYPE
GROUND SURFACE	287.04		
Dark brown **TOPSOIL**, trace organics	0.00 286.74	1A	CS
Brown **SILTY SAND AND GRAVEL**, with cobbles from 1.83m to 2.29m	0.30 283.53	1B 2A 2B 3A	CS CS CS CS
Grey **SILTY SAND AND GRAVEL**	3.51 282.93	3B 4	CS CS
Grey fractured **LIMESTONE BEDROCK**, with silt infilling	4.11 280.64	5	CS
END OF BOREHOLE	6.40		

MW 3S

Top of Pipe
Elev. 288.14

Well casing
(229mm) to
0.91m

Bentonite

Riser Pipe

Well Sreen

Water level measured
in Well at Elev.
285.31m Aug. 30, 2000

MW 3D

Top of Pipe
Elev. 287.89

Well casing
(300mm) to
0.91m

Grout

Well casing
(114mm) to
5.18m

Bentonite

Riser Pipe

Filter Sand

Well Sreen

Caved material
Water level
encountered in
borehole at elev
283.69m depth during
drilling July 26, 2000

Water level measured
in Well at Elev.
285.87m Aug. 30, 2000

DEPTH SCALE
1 : 50

Golder Associates

LOGGED T.P.
CHECKED RdW

[illegible] ENV 001-3105-1.GPJ GLDR [illegible] GDT 15-0[illegible] DATA INPUT: G Galleno

PROJECT 001-3105-1

LOCATION - SEE LOCATION PLAN -

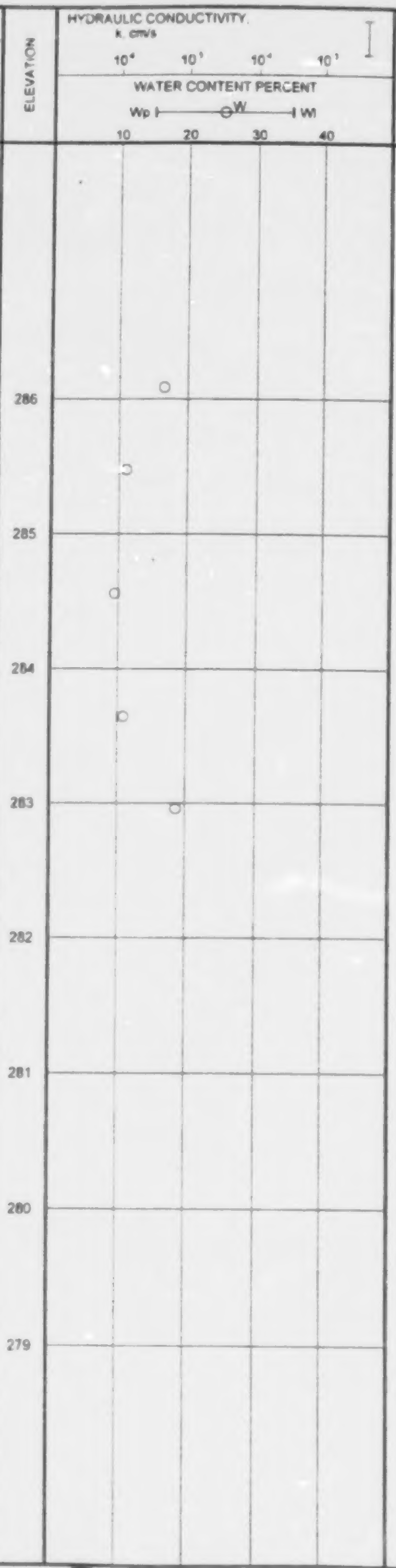
RECORD OF BOREHOLE 4S

SHEET 1 OF 1

DATUM GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	ELEV / DEPTH (m)
0	POWER AUGER (HOLLOW STEM)	GROUND SURFACE	286.69
		Dark brown TOPSOIL, trace organics	0.00
		Brown SILT, trace to some gravel, trace sand, with cobbles	286.39 0.30
		Brown SILT and GRAVEL, with cobbles	283.95 2.74
	AIR ROTARY (UNCASED)	Grey LIMESTONE BEDROCK	282.58 4.11
		END OF BOREHOLE	278.77 7.92

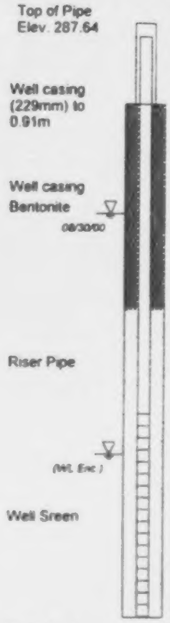
SAMPLES NUMBER	TYPE
1A	CS
1B	CS
2	CS
3	CS
4A	CS
4B	CS
5	CS



ADDITIONAL LAB TESTING

INSTALLATION AND GROUNDWATER OBSERVATIONS

MW 4S


Top of Pipe Elev. 287.64
Well casing (229mm) to 0.91m
Well casing Bentonite
08/30/00
Riser Pipe
(W.L. Enc.)
Well Sreen

Water level encountered in borehole at elev. 284.26m depth during drilling July 27, 2000

Water level measured in Well at Elev. 285.88m Aug. 30, 2000

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: T.P.
CHECKED: RCW

LDN_ENV 001-3105.GPJ GLDR_LDN.GDT 17-09-00 DATA INPUT B Gallerno

PROJECT: 001-3105-1

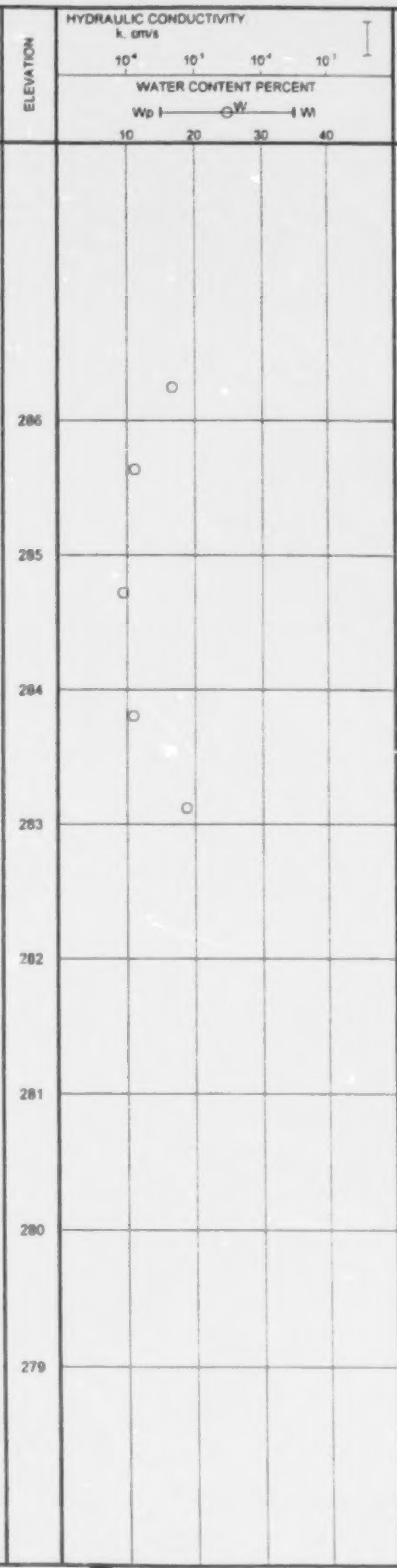
RECORD OF BOREHOLE 4D

SHEET 1 OF 1

LOCATION: - SEE LOCATION PLAN -

DATUM GEODETIC

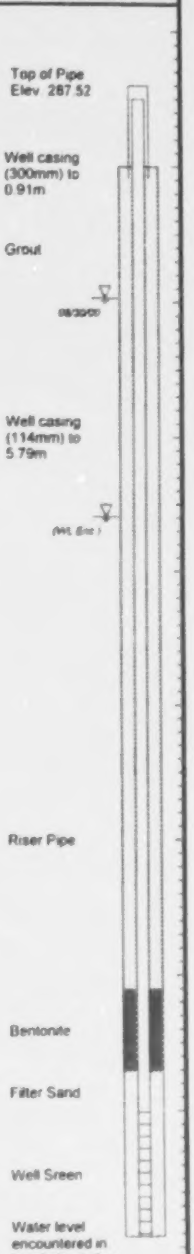
DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE
0		GROUND SURFACE	286.85		
	POWER AUGER (HOLLOW STEM)	Dark brown **TOPSOIL**, trace organics	0.00	1A	CS
1		Brown **SILT**, trace to some gravel, trace sand, with cobbles	286.55 0.30	1B 2 3	CS CS CS
3		Brown **SILT** and **GRAVEL**, with cobbles	284.11 2.74	4A 4B	CS CS
4	AIR ROTARY (UNCASED)	Grey **LIMESTONE BEDROCK**	282.74 4.11	5	CS
8		END OF BOREHOLE	278.93 7.92		



ADDITIONAL LAB TESTING

INSTALLATION AND GROUNDWATER OBSERVATIONS

MW 4D


Top of Pipe
Elev. 287.52
Well casing
(300mm) to
0.91m
Grout
08/30/00
Well casing
(114mm) to
5.79m
(WL Enc.)
Riser Pipe
Bentonite
Filter Sand
Well Sreen

Water level encountered in borehole at elev 284.26m depth during drilling July 27, 2000

Water level measured in Well at Elev 285.88m Aug. 30, 2000

DEPTH SCALE
1 : 50

Golder Associates

LOGGED T.P
CHECKED RW

LDN ENV 001-3105.GPJ GLDR LON.GDT 15-09-00 DATA INPUT: B Gelleme

PROJECT: 001-3105-1

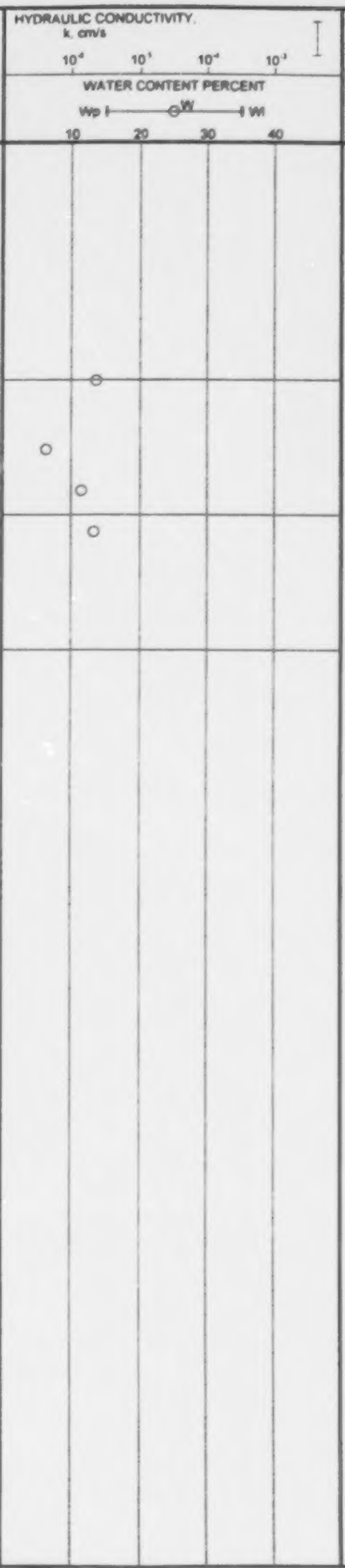
LOCATION: - SEE LOCATION PLAN -

RECORD OF BOREHOLE 5

SHEET 1 OF 1

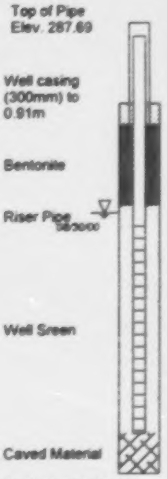
DATUM: GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	ELEV DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	ELEVATION
		GROUND SURFACE	286.55			
0	POWER AUGER (HOLLOW STEM)	Brown **TOPSOIL**, trace organics	0.00 286.25	1A	CS	
		Brown **SANDY SILT**, and gravel, with cobbles	0.30 285.64	1B	CS	286
1	AIR ROTARY (UNCASED)	Brown **SAND AND GRAVEL**, trace silt	0.91 284.87	2A 2B 2C		285
2		Brown becoming grey at 2.59m depth **SILT**, trace gravel	1.68 283.81			284
3		END OF BOREHOLE	2.74			
4						
5						
6						
7						
8						
9						



INSTALLATION AND GROUNDWATER OBSERVATIONS

MW 5


Top of Pipe
Elev. 287.69
Well casing
(300mm) to
0.91m
Bentonite
Riser Pipe
Well Sreen
Caved Material

Borehole dry during drilling drilling July 27, 2000

Water level measured in Well at Elev. 285.74m Aug. 30, 2000

LDN_ENV 001-3105.GPJ GLDR_LDN.GDT 17-08-00 DATA INPUT: B Galleme

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: T.P.
CHECKED: RW

PROJECT: 001-3105-1

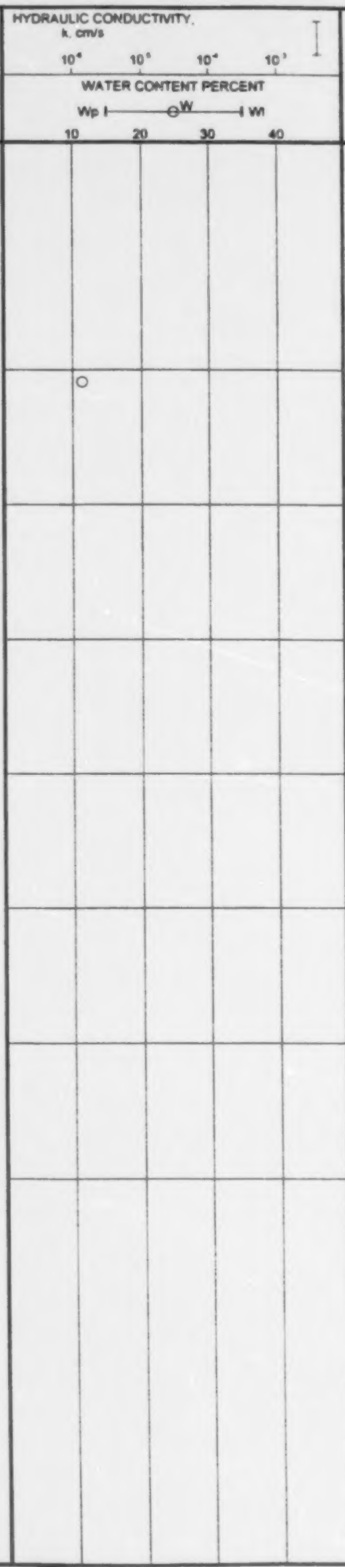
LOCATION: - SEE LOCATION PLAN -

RECORD OF BOREHOLE 6

SHEET 1 OF 1

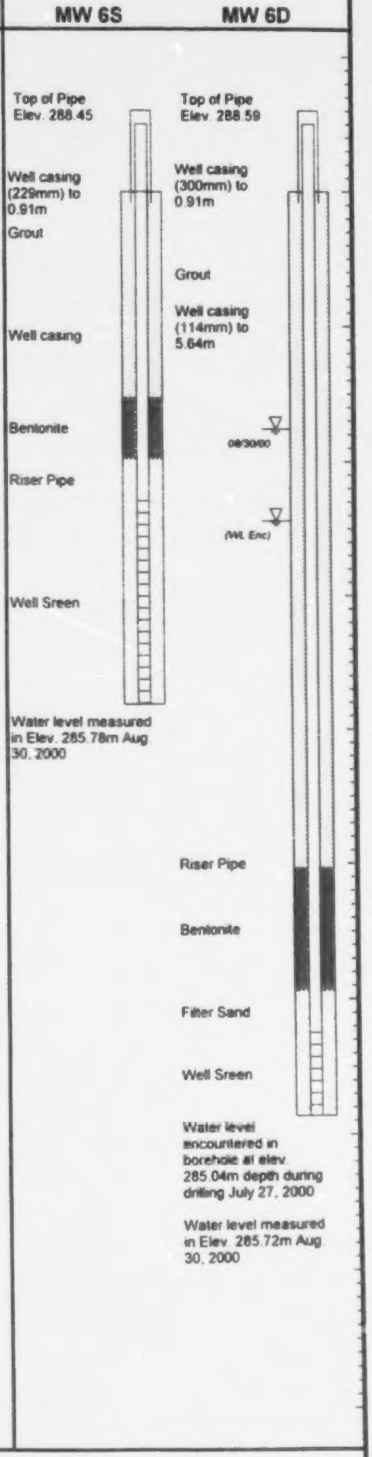
DATUM GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	ELEVATION
		GROUND SURFACE		287.48			
0	POWER AUGER (HOLLOW STEM)	Brown **TOPSOIL**, trace organics		0.00 287.25	1A	CS	
		Brown **SILT**, trace to some sand trace to some gravel		0.23	1B	CS	287
1							
							286
2					2	CS	
				284.74			285
3		Brown **SANDY SILT**, with silty sand seams		2.74	3A	CS	
				283.82			284
4		Grey **SILT**, and gravel		3.65	3B	CS	
				282.91	4A	CS	283
	AIR ROTARY (UNCASED)	Grey and brown, bedded **LIMESTONE BEDROCK**, with fossils		4.57	4B	CS	
5							
							282
6							
				280.62			281
7		END OF BOREHOLE		6.86			
8							
9							



ADDITIONAL LAB TESTING

INSTALLATION AND GROUNDWATER OBSERVATIONS


MW 6S
MW 6D
Top of Pipe Elev. 288.45
Well casing (229mm) to 0.91m
Grout
Well casing
Bentonite
Riser Pipe
Well Sreen
Top of Pipe Elev. 288.59
Well casing (300mm) to 0.91m
Grout
Well casing (114mm) to 5.64m
08/30/00
(WL Enc)
Riser Pipe
Bentonite
Filter Sand
Well Sreen

Water level measured in Elev. 285.78m Aug 30, 2000

Water level encountered in borehole at elev. 285.04m depth during drilling July 27, 2000

Water level measured in Elev. 285.72m Aug 30, 2000

LDN_ENV 001-3105.GPJ GLDR_LDN.GDT 15-09-00 DATA INPUT B Gallone

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: T.P.

CHECKED: RW

PROJECT: 001-3105-1

LOCATION: - SEE LOCATION PLAN -

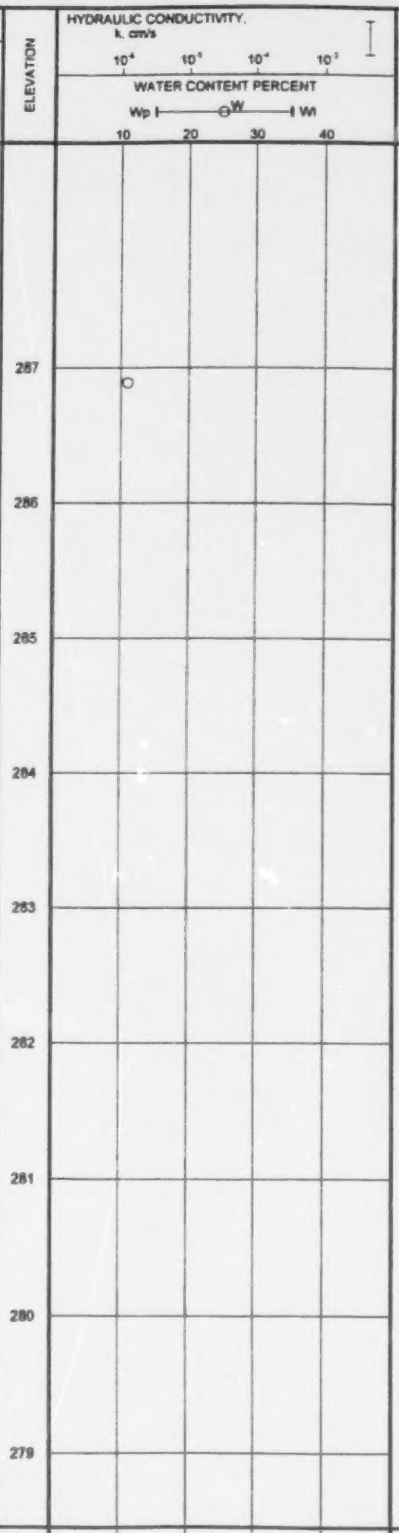
RECORD OF BOREHOLE 7

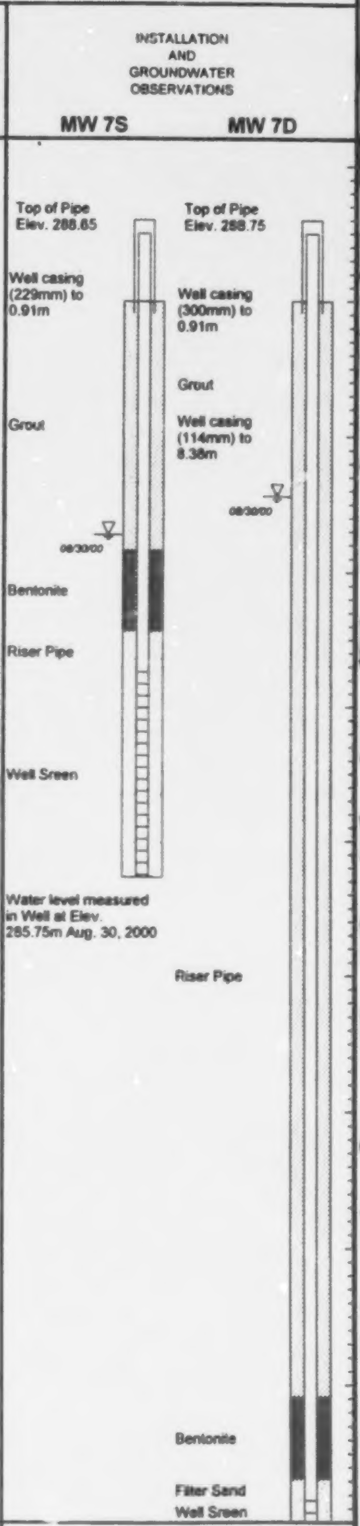
SHEET 1 OF 2

DATUM: GEODETIC

BORING METHOD: POWER AUGER (HOLLOW STEM) to approx. 8.6 m; AIR ROTARY (UNCASED) below

DEPTH SCALE METRES	SOIL PROFILE DESCRIPTION	ELEV. / DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	ADDITIONAL LAB. TESTING
0	GROUND SURFACE	287.46			
	Brown **TOPSOIL**, trace organics	0.00	1A	CS	
	Brown **SANDY SILT**, and gravel, with cobbles	287.23 0.23	1B 2 3 4A 4B	CS CS CS CS CS	
	Grey **SAND AND GRAVEL**, trace to some silt	282.89 4.57	5A	CS	
	Grey **LIMESTONE**, with fossils	282.13 5.33	5B	CS	M
	Grey **SAND AND GRAVEL**	281.82 5.64	6	CS	
	Grey **LIMESTONE BEDROCK**	280.14 7.32	7	CS	
9	— CONTINUED NEXT PAGE —				




INSTALLATION AND GROUNDWATER OBSERVATIONS
MW 7S
MW 7D
Top of Pipe Elev. 288.65
Top of Pipe Elev. 288.75
Well casing (229mm) to 0.91m
Well casing (300mm) to 0.91m
Grout
Grout
Well casing (114mm) to 8.38m
08/30/00
08/30/00
Bentonite
Riser Pipe
Well Sreen
Water level measured in Well at Elev. 285.75m Aug. 30, 2000
Riser Pipe
Bentonite
Filter Sand
Well Sreen

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: T.P.
CHECKED: RW

LDN_ENV 001-3105.GPJ GLDR_LDN.GDT 15-09-00 DATA INPUT: B Galerno

PROJECT: 001-3105-1

LOCATION: - SEE LOCATION PLAN -

RECORD OF BOREHOLE 7

SHEET 2 OF 2

DATUM GEODETIC

DEPTH SCALE METRES		SOIL PROFILE			SAMPLES		ELEVATION	HYDRAULIC CONDUCTIVITY, k, cm/s: 10⁻⁶ 10⁻⁵ 10⁻⁴ 10⁻³ / WATER CONTENT PERCENT: Wp ⊢—○W—⊣ Wl: 10 20 30 40	ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS	
		DESCRIPTION	STRATA PLOT	ELEV / DEPTH (m)	NUMBER	TYPE				MW 7S	MW 7D
		— CONTINUED FROM PREVIOUS PAGE —									
9	AIR ROTARY (UNCASED)	Grey LIMESTONE BEDROCK	▦	277.55			278			Well Sreen	▤
10		END OF BOREHOLE		9.91						Water level encountered in borehole at elev. 285.17m depth during drilling July 28, 2000 Water level measured in Well at Elev. 286.03m Aug. 30, 2000	
11											
12											
13											
14											
15											
16											
17											
18											
19											

LDN_ENV 001-3105.GPJ GLDR_LDN.GDT 15-09-00 DATA INPUT: B G[illegible]

DEPTH SCALE

1 : 50

Golder Associates

LOGGED T.P.

CHECKED RM

PROJECT: 001-3105-1

LOCATION: - SEE LOCATION PLAN -

RECORD OF BOREHOLE 8

SHEET 1 OF 1

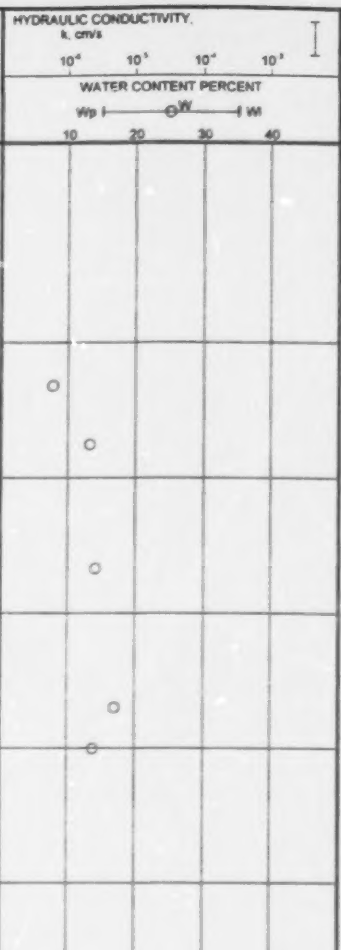
DATUM: GEODETIC

DEPTH SCALE METRES

BORING METHOD	SOIL PROFILE DESCRIPTION	ELEV / DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	ELEVATION
	GROUND SURFACE	287.27			
POWER AUGER (HOLLOW STEM)	Dark brown **TOPSOIL**, trace organics, trace gravel	0.00	1A	CS	
	Brown **SANDY SILT**, and gravel, with cobbles	287.00 0.27	1B 2A 2B	CS CS CS	287 286
	Grey **SILT**, trace to some gravel	285.14 2.13	3A	CS	285
	Grey **SILTY SAND**, and gravel	284.07 3.20	3B	CS	284
AIR ROTARY (UNCASED)	Grey fractured **LIMESTONE BEDROCK**	3.35	3C	CS	283
	END OF BOREHOLE	282.09 5.18			

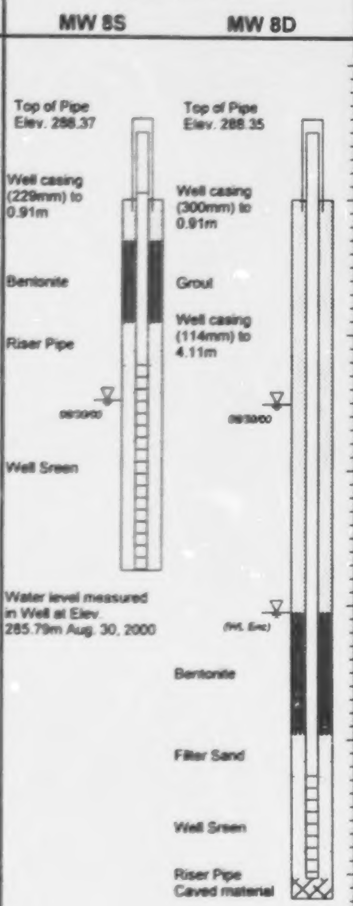
HYDRAULIC CONDUCTIVITY, k, cm/s

WATER CONTENT PERCENT



ADDITIONAL LAB TESTING

INSTALLATION AND GROUNDWATER OBSERVATIONS



MW 8S
MW 8D
Top of Pipe Elev. 288.37
Well casing (229mm) to 0.91m
Bentonite
Riser Pipe
Well Sreen
Top of Pipe Elev. 288.35
Well casing (300mm) to 0.91m
Grout
Well casing (114mm) to 4.11m
(W.L. Enc)
Bentonite
Filter Sand
Well Sreen
Riser Pipe
Caved material

Water level measured in Well at Elev. 285.79m Aug. 30, 2000

Water level encountered in borehole at elev. 284.98m depth during drilling July 28, 2000

Water level measured in Well at Elev. 285.77m Aug. 30, 2000

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: T.P.

CHECKED: BW

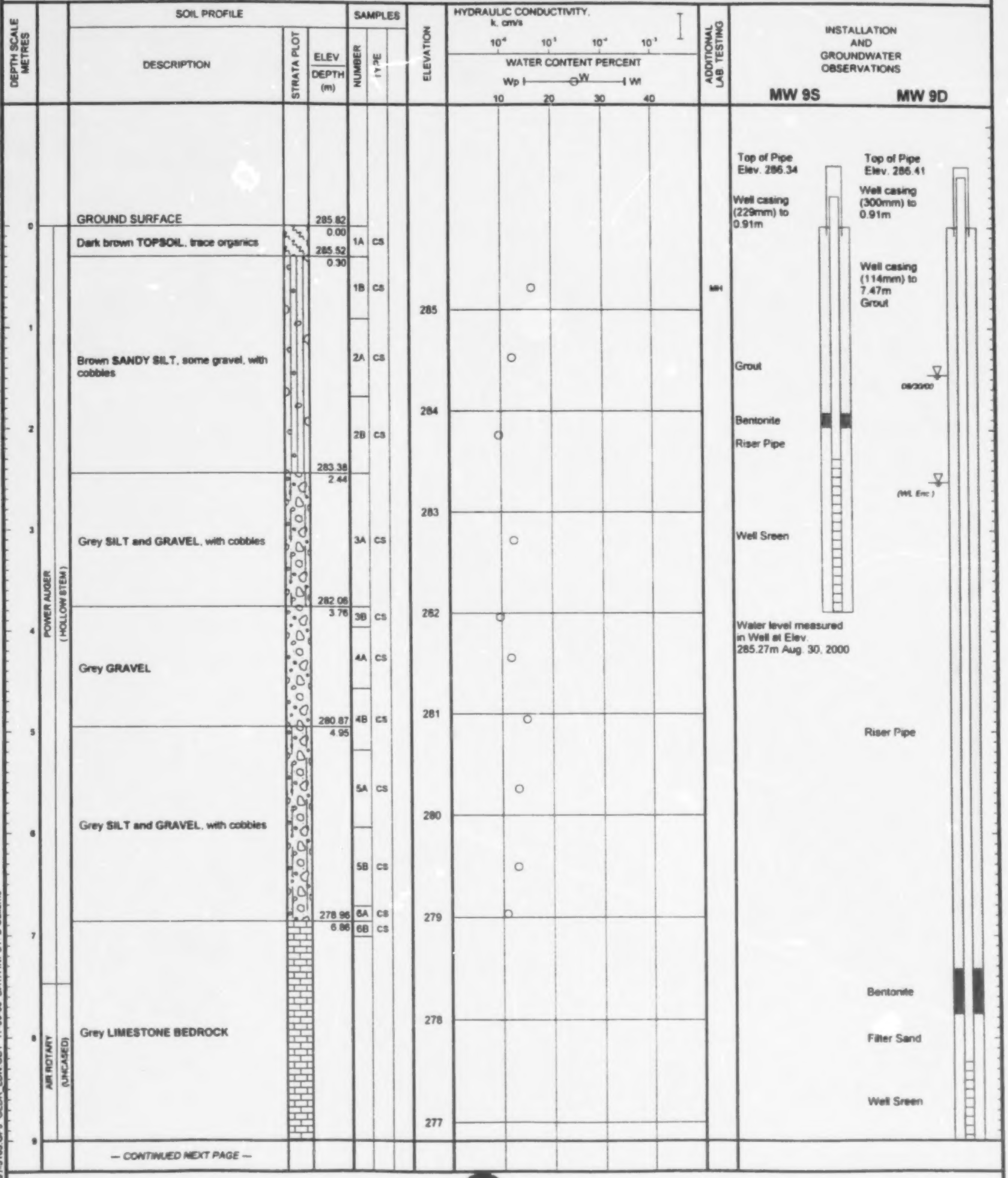
PROJECT: 001-3105-1

LOCATION: - SEE LOCATION PLAN -

RECORD OF BOREHOLE 9

SHEET 1 OF 2

DATUM GEODETIC


DEPTH SCALE METRES
SOIL PROFILE
STRATA PLOT
SAMPLES
ELEVATION
HYDRAULIC CONDUCTIVITY, k, cm/s
10⁻⁶ 10⁻⁵ 10⁻⁴ 10⁻³
WATER CONTENT PERCENT
Wp W Wl
10 20 30 40
ADDITIONAL LAB TESTING
INSTALLATION AND GROUNDWATER OBSERVATIONS
MW 9S
MW 9D
Top of Pipe Elev. 286.34
Well casing (229mm) to 0.91m
Grout
Bentonite
Riser Pipe
Well Sreen
Water level measured in Well at Elev. 285.27m Aug. 30, 2000
Top of Pipe Elev. 286.41
Well casing (300mm) to 0.91m
Well casing (114mm) to 7.47m
Grout
08/30/00
(W.L. Enc.)
Riser Pipe
Bentonite
Filter Sand
Well Sreen
POWER AUGER
(HOLLOW STEM)
AIR ROTARY
(UNCASED)
0 1 2 3 4 5 6 7 8 9
285 284 283 282 281 280 279 278 277

DESCRIPTION	ELEV DEPTH (m)
GROUND SURFACE	285.82
Dark brown **TOPSOIL**, trace organics	0.00
Brown **SANDY SILT**, some gravel, with cobbles	285.52 0.30
Grey **SILT and GRAVEL**, with cobbles	283.38 2.44
Grey **GRAVEL**	282.06 3.76
Grey **SILT and GRAVEL**, with cobbles	280.87 4.95
Grey **LIMESTONE BEDROCK**	278.96 6.86

NUMBER	TYPE	ADDITIONAL LAB TESTING
1A	CS	
1B	CS	MH
2A	CS	
2B	CS	
3A	CS	
3B	CS	
4A	CS	
4B	CS	
5A	CS	
5B	CS	
6A	CS	
6B	CS	

— CONTINUED NEXT PAGE —

LDN ENV 001-3105.GPJ GLDR_LDN.GDT 17-09-00 DATA INPUT: B Galemo

DEPTH SCALE

1 : 50

Golder Associates

LOGGED R.A.

CHECKED RW

PROJECT: 001-3105-1

LOCATION: - SEE LOCATION PLAN -

RECORD OF BOREHOLE 9

SHEET 2 OF 2

DATUM: GEODETIC

DEPTH SCALE METRES		SOIL PROFILE			SAMPLES		ELEVATION	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} / WATER CONTENT PERCENT Wp ⊢—○W—⊣ Wl 10 20 30 40	ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE				MW 9S	MW 9D
		— CONTINUED FROM PREVIOUS PAGE —									
9	AIR ROTARY (UNCASED)	Grey **LIMESTONE BEDROCK**									Well Sreen
		END OF BOREHOLE		276.07 9.75			276				
10											Water level encountered in borehole at elev. 283.30m depth during drilling July 31, 2000 Water level measured in Well at Elev. 284.36m Aug. 30, 2000
11											
12											
13											
14											
15											
16											
17											
18											
19											

LDN ENV 001-3105.GPJ GLDR_LDN.GDT 17-08-00 DATA INPUT: B Galiano

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: R.A.

CHECKED: RW

PROJECT: 001-3105-1

LOCATION: - SEE LOCATION PLAN -

RECORD OF BOREHOLE 10

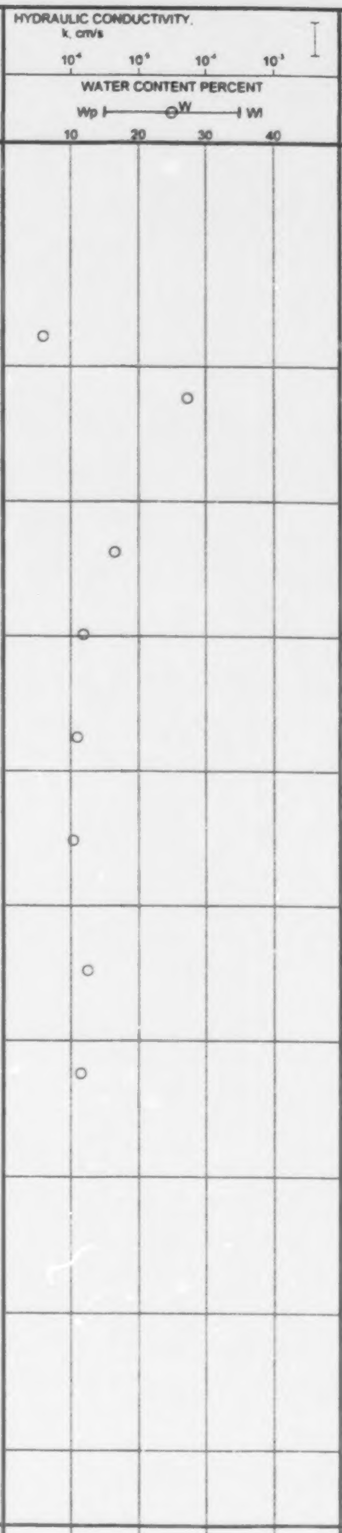
SHEET 1 OF 2

DATUM: GEODETIC

BORING METHOD	SOIL PROFILE DESCRIPTION	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE
	GROUND SURFACE	285.45 0.00		
POWER AUGER (HOLLOW STEM)	Grey sand and gravel (FILL)		1A	CS
POWER AUGER (HOLLOW STEM)	Brown topsoil mixed with brown and grey clayey silt, with sand pockets, trace wood, trace gravel, with cobbles, (FILL)	284.99 0.46	1B	CS
POWER AUGER (HOLLOW STEM)	Brown **SILT**, trace sand, trace to some gravel	284.23 1.22	2A 2B 3A	CS CS CS
POWER AUGER (HOLLOW STEM)	Brown **SANDY SILTand GRAVEL**	281.79 3.66	3B	CS
POWER AUGER (HOLLOW STEM)	Brown **SANDY SILT**, and gravel	281.18 4.27	4A	CS
POWER AUGER (HOLLOW STEM) AIR ROTARY (UNCASED)	Grey bedded, weathered **LIMESTONE BEDROCK**	279.86 5.59	4B	CS

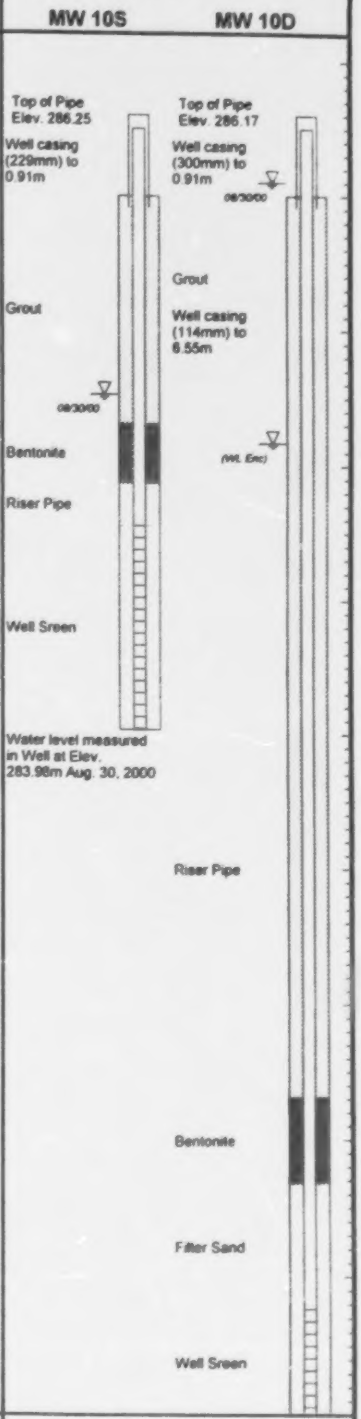
DEPTH SCALE METRES: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

ELEVATION: 285, 284, 283, 282, 281, 280, 279, 278, 277



ADDITIONAL LAB TESTING

INSTALLATION AND GROUNDWATER OBSERVATIONS



MW 10S
MW 10D
Top of Pipe Elev. 286.25
Well casing (229mm) to 0.91m
Grout
08/30/00
Bentonite
Riser Pipe
Well Sreen
Top of Pipe Elev. 286.17
Well casing (300mm) to 0.91m
08/30/00
Grout
Well casing (114mm) to 6.55m
(Wt. Enc)
Riser Pipe
Bentonite
Filter Sand
Well Sreen

Water level measured in Well at Elev. 283.98m Aug. 30, 2000

— CONTINUED NEXT PAGE —

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: T.P.

CHECKED:

PROJECT: 001-3105-1

RECORD OF BOREHOLE 10

SHEET 2 OF 2

LOCATION: - SEE LOCATION PLAN -

DATUM: GEODETIC

DEPTH SCALE METRES		SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	ELEVATION	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} WATER CONTENT PERCENT Wp ⊢—○W—⊣ Wl 10 20 30 40	ADDITIONAL LAB. TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS **MW 10S** **MW 10D**
		— CONTINUED FROM PREVIOUS PAGE —								
9	AIR ROTARY (UNCASED)	Grey bedded, weathered LIMESTONE BEDROCK		275.70			276			Well Sreen
		END OF BOREHOLE		9.75						
10										Water level encountered in borehole at elev. 283.62m depth during drilling AUG. 1, 2000 Water level measured in Well at Elev. 285.55m Aug. 30, 2000
11										
12										
13										
14										
15										
16										
17										
18										
19										

LDN_ENV 001-3105.GPJ GLDR_LDN.GDT 17-09-00 DATA INPUT: B Gallerno

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: T.P.
CHECKED: BM

PROJECT: 001-3105-1

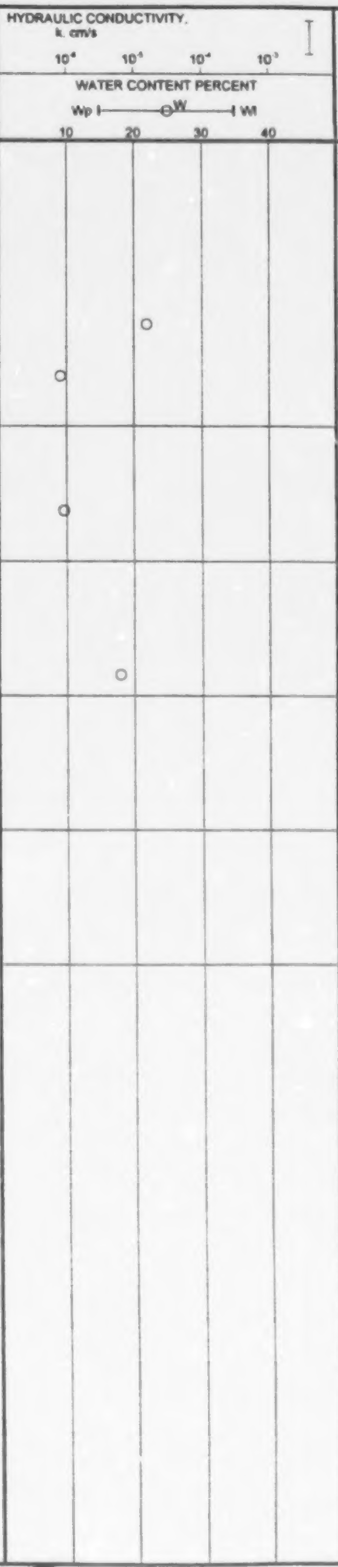
LOCATION: - SEE LOCATION PLAN -

RECORD OF BOREHOLE 11

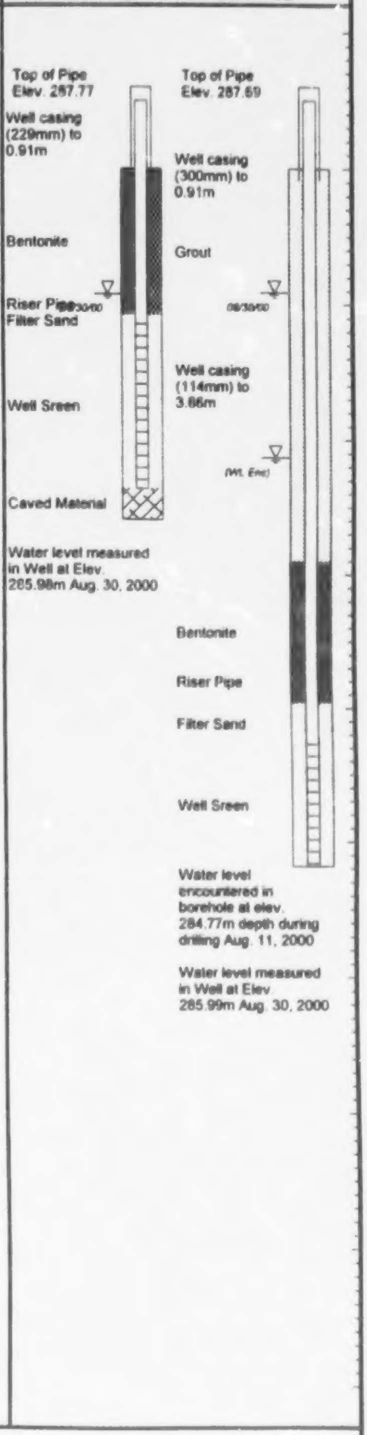
SHEET 1 OF 1

DATUM GEODETIC

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	ELEV. DEPTH (m)	SAMPLE NUMBER	TYPE	ADDITIONAL LAB TESTING
		GROUND SURFACE	286.90			
0	POWER AUGER (HOLLOW STEM)	Dark brown **TOPSOIL**, trace organics, trace gravel	0.00	1A	CS	
		Brown **SILT**, trace to some gravel, with cobbles	286.60 0.30	1B	CS	
1				2	CS	
2		Grey **SILT**, some gravel, with cobbles	284.77 2.13			
		Grey **SAND and GRAVEL**	2.29	3A	CS	M
3		Grey fractured **LIMESTONE BEDROCK**	283.70 3.20	3B	CS	
4	AIR ROTARY (UNCASED)					
5		END OF BOREHOLE	281.72 5.18			



INSTALLATION AND GROUNDWATER OBSERVATIONS



MW 11S
MW 11D
Top of Pipe Elev. 287.77
Well casing (229mm) to 0.91m
Bentonite
Riser Pipe
08/30/00
Filter Sand
Well Sreen
Caved Material
Top of Pipe Elev. 287.69
Well casing (300mm) to 0.91m
Grout
08/30/00
Well casing (114mm) to 3.86m
(Wt. Enc)
Bentonite
Riser Pipe
Filter Sand
Well Sreen

Water level measured in Well at Elev. 285.98m Aug. 30, 2000

Water level encountered in borehole at elev. 284.77m depth during drilling Aug. 11, 2000

Water level measured in Well at Elev. 285.99m Aug. 30, 2000

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: T.P.

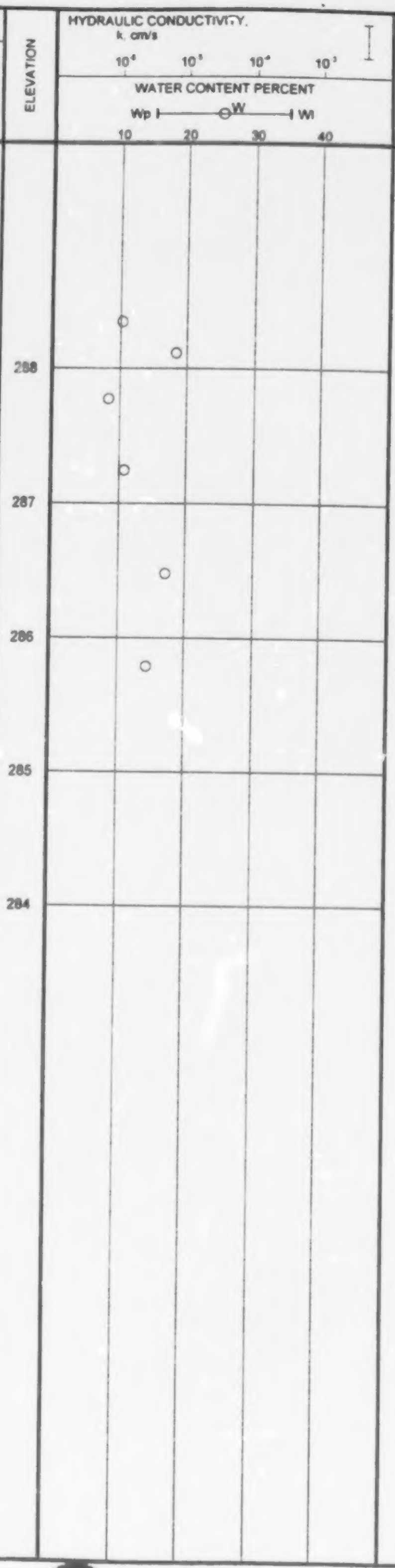
CHECKED: RM

PROJECT: 001-3105-1
LOCATION: - SEE LOCATION PLAN -

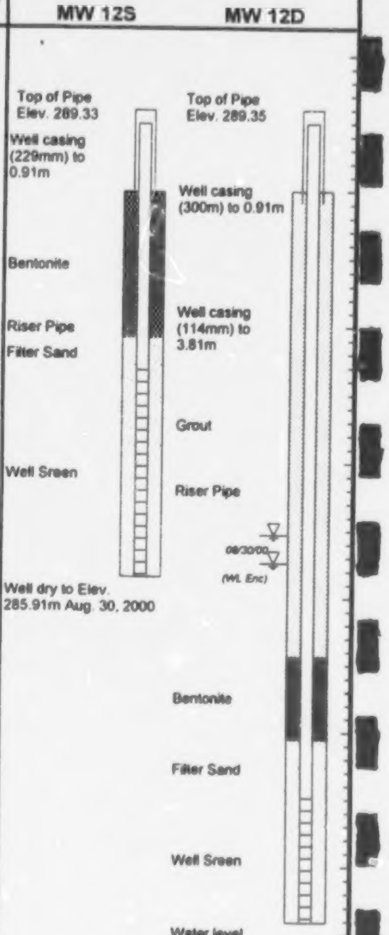
RECORD OF BOREHOLE 12

SHEET 1 OF 1
DATUM: GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	ADDITIONAL LAB TESTING
0		GROUND SURFACE		288.46			
	POWER AUGER (HOLLOW STEM)	Brown sandy silt and gravel, with topsoil (FILL)	☒	0.00	1A	CS	
		Brown TOPSOIL, trace gravel		288.23 0.23	1B	CS	
		Brown SANDY SILT, some gravel		288.00 0.46	1C	CS	
1					2A	CS	MH
		Mottled brown and grey SANDY SILT, some gravel, with cobbles		286.94 1.52	2B	CS	
2					3A	CS	MH
3	AIR ROTARY (UNCASED)	Grey fractured LIMESTONE BEDROCK		285.56 2.90	3B	CS	
5		END OF BOREHOLE		283.05 5.41			



INSTALLATION AND GROUNDWATER OBSERVATIONS



MW 12S
MW 12D
Top of Pipe Elev. 289.33
Well casing (229mm) to 0.91m
Bentonite
Riser Pipe
Filter Sand
Well Sreen
Top of Pipe Elev. 289.35
Well casing (300m) to 0.91m
Well casing (114mm) to 3.81m
Grout
Riser Pipe
08/30/00
(WL Enc)
Bentonite
Filter Sand
Well Sreen

Well dry to Elev. 285.91m Aug. 30, 2000

Water level encountered in borehole at elev. 285.72m depth during drilling Aug. 11, 2000

Water level measured in Well at Elev. 285.93m Aug. 30, 2000

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: T.P.
CHECKED: RW

PROJECT: 001-3105-1

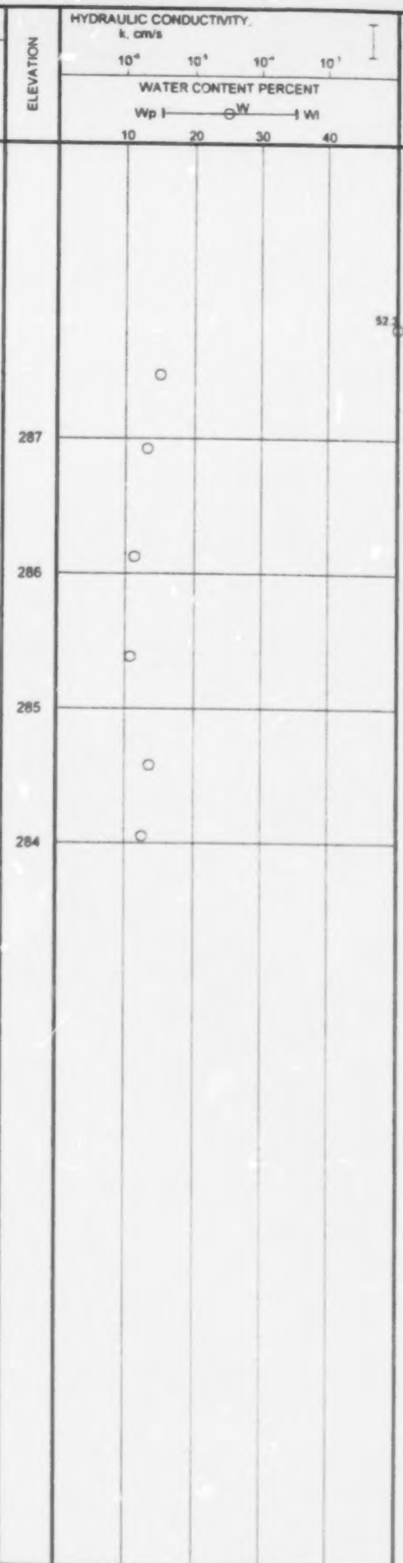
LOCATION: - SEE LOCATION PLAN -

RECORD OF BOREHOLE 13

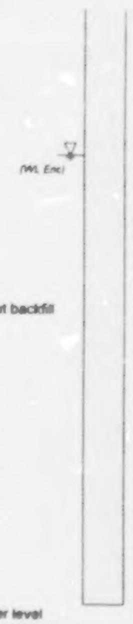
SHEET 1 OF 1

DATUM GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE – DESCRIPTION	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	ADDITIONAL LAB TESTING
0		GROUND SURFACE	287.98			
	POWER AUGER (HOLLOW STEM)	Black sandy silt **TOPSOIL**	0.00 287.66	1A	CS	
		Brown **SILTY FINE TO MEDIUM SAND**	0.32 287.19	1B	CS	
1 2		Brown **SILTY SAND AND GRAVEL**, trace clay, with cobbles	0.79 285.69	1C 2A	CS CS	
		Brown **SAND AND GRAVEL**, some silt, cobbles	2.29 285.08	2B	CS	M
3		Brown **SANDY SILT AND GRAVEL**, some clay, occasional wet sand seams	2.90 284.11	3A	CS	
4		Highly weathered, broken pieces of **LIMESTONE**	3.87	3B	CS	
		Grey fractured **LIMESTONE BEDROCK**	3.96 283.56			
		END OF BOREHOLE	4.42			
5 6 7 8 9						



INSTALLATION AND GROUNDWATER OBSERVATIONS



Grout backfill

Water level encountered in borehole at elev 286.91m depth during drilling Aug 17, 2000

DEPTH SCALE

1 : 50

Golder Associates

LOGGED R.A.

CHECKED

PROJECT 001-3105-1

LOCATION - SEE LOCATION PLAN -

RECORD OF BOREHOLE 14

SHEET 1 OF 1

DATUM: GEODETIC

DEPTH SCALE METRES		SOIL PROFILE			SAMPLES		ELEVATION	HYDRAULIC CONDUCTIVITY k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} / WATER CONTENT PERCENT Wp ⊢—○W—⊣ Wl 10 20 30 40	ADDITIONAL LAB TESTING	INSTALLATION AND GROUNDWATER OBSERVATIONS
		DESCRIPTION	STRATA PLOT	ELEV / DEPTH (m)	NUMBER	TYPE				
		GROUND SURFACE		288.71						
0	POWER AUGER (HOLLOW STEM)	Black sandy silt **TOPSOIL**		0.00 288.39	1A	CS				
		Brown **FINE TO MEDIUM SAND** occasional gravel, trace silt		0.32 287.78	1B	CS	288			
1		Brown **SILTY SAND AND GRAVEL** with gravel seams		0.93 287.49						
		Brown **SAND AND GRAVEL**, trace to some silt		1.22 286.73	2A	CS	287		M	(WL Enc)
2		Brown **SILTY SAND AND GRAVEL** with seams of medium to coarse sand layers of broken rock, cobbles		1.98 285.81	2B	CS	286			Grout Backfill
3		Highly weathered and broken pieces of **LIMESTONE**		2.90 285.51						
		Grey fractured **LIMESTONE BEDROCK**		3.20 284.90	3	CS	285			
4		END OF BOREHOLE		3.81						Water level encountered in borehole at elev 287.24m depth during drilling Aug. 17, 2000
5										
6										
7										
8										
9										

LDN ENV 001-3105.GPJ GLDR_LDN.GDT 15-09-00 DATA INPUT: B Gallerno

DEPTH SCALE

1:50

Golder Associates

LOGGED: R.A.

CHECKED: RAW

PROJECT: 001-3105-1

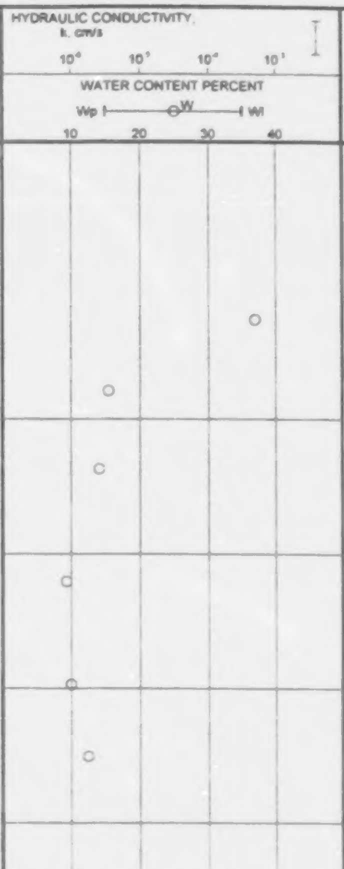
LOCATION: - SEE LOCATION PLAN -

RECORD OF BOREHOLE 15

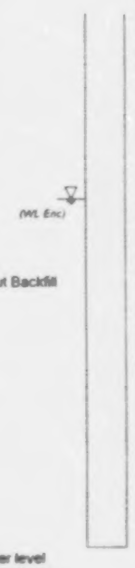
SHEET 1 OF 1

DATUM GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	ELEVATION	ADDITIONAL LAB TESTING
0		GROUND SURFACE		287.85				
	POWER AUGER (HOLLOW STEM)	Black sandy silt **TOPSOIL**		0.00 287.64 0.21	1A	CS		
		Brown **FINE TO MEDIUM SAND**, trace gravel, occasional silt seam		286.87 0.98	1B	CS	287	
1		Brown becoming grey at about 2.53m depth **SANDY SILT**, with gravel, cobbles, trace clay			1C	CS		
2					2A	CS	286	MH
				284.95 2.90	2B	CS	285	
3		Highly weathered and broken pieces of **LIMESTONE**, trace sand		284.65 3.20				
		Grey fractured **LIMESTONE BEDROCK**		283.89 3.96	3A	CS		
					3B	CS	284	
4		END OF BOREHOLE						
5								
6								
7								
8								
9								



INSTALLATION AND GROUNDWATER OBSERVATIONS



Grout Backfill

Water level encountered in borehole at elev 286.48m depth during drilling Aug. 18, 2000

DEPTH SCALE
1 : 50

Golder Associates

LOGGED R.A.
CHECKED RAN

PROJECT: 001-3105-1

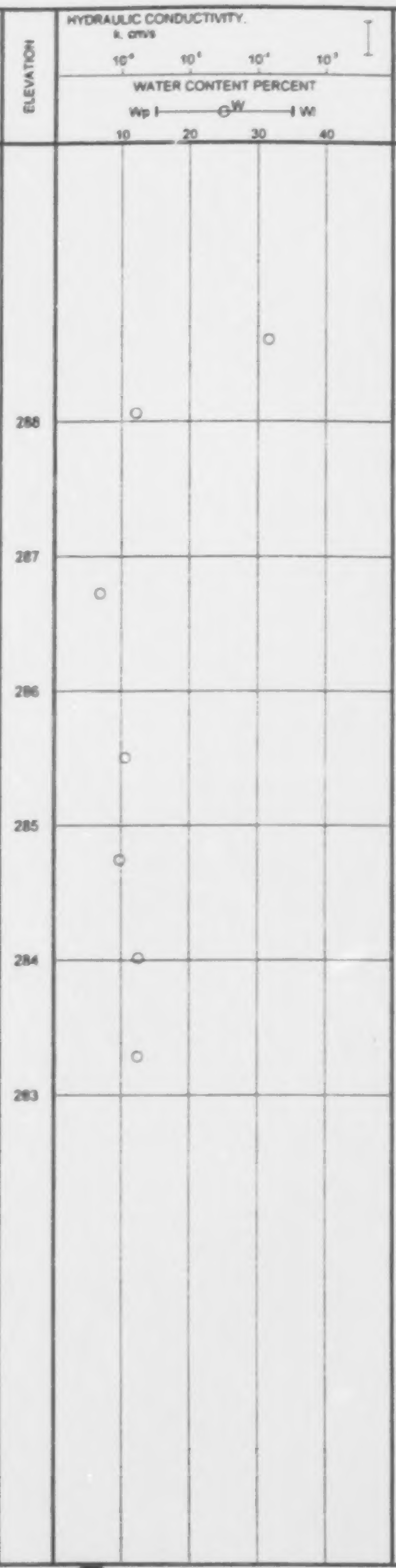
LOCATION: - SEE LOCATION PLAN -

RECORD OF BOREHOLE 16

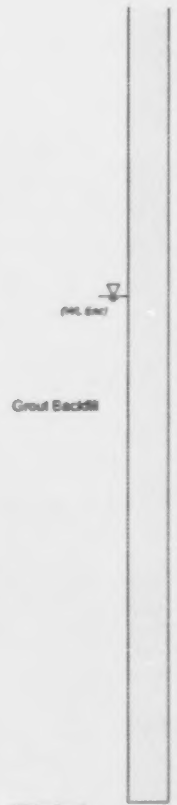
SHEET 1 OF 1

DATUM: GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV / DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE
0		GROUND SURFACE		288.86		
	POWER AUGER (HOLLOW STEM)	Black sandy silt **TOPSOIL**		0.00 288.37	1A	CS
		Black and brown topsoil, with brown clayey silt, (**FILL**)	▨	0.49 287.85	1B	CS
1		Brown **SILTY SAND**, trace gravel		1.01 287.55	1C	CS
2		Brown **SILTY SAND AND GRAVEL**, occasional wet silt seam		1.31	2	CS
3					3A	CS
4				284.44	3B	CS
5		Brown **SILTY SAND AND GRAVEL**, with layers of broken pieces of limestone rock		4.42 283.59	4A	CS
		Grey fractured **LIMESTONE BEDROCK**		5.27 282.98	4B	CS
6		END OF BOREHOLE		5.88		
7						
8						
9						



INSTALLATION AND GROUNDWATER OBSERVATIONS



Grout Backfill

Water level encountered in borehole at elev. 286.73m depth during drilling Aug. 18, 2000

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: R.A.
CHECKED: RW

LDN_ENV 001-3105.GPJ GLDR_LDN.GDT 15-09-00 DATA INPUT B Galliene

PROJECT: 001-3105-1

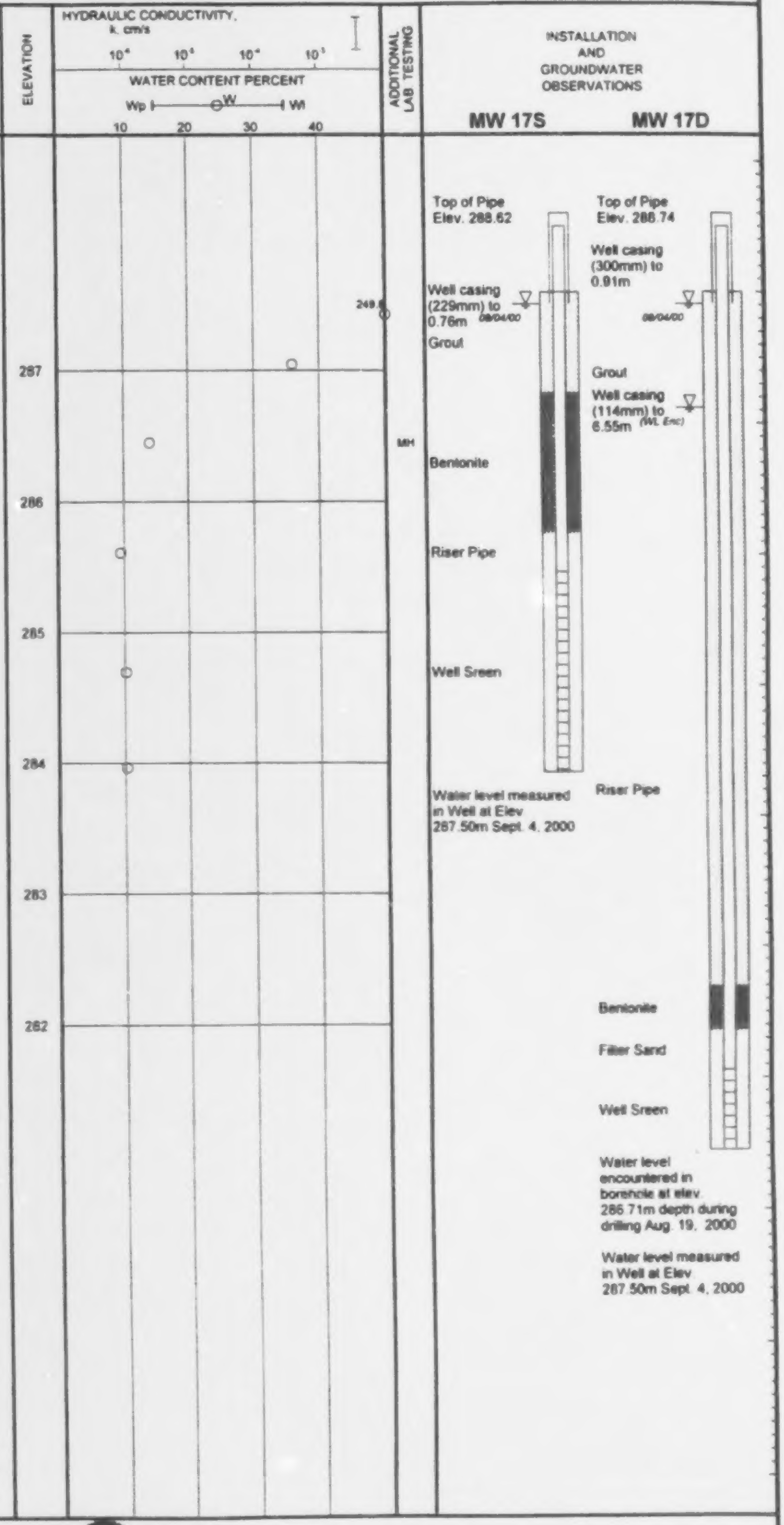
LOCATION: - SEE LOCATION PLAN -

RECORD OF BOREHOLE 17

SHEET 1 OF 1

DATUM: GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	ADDITIONAL LAB TESTING
0	POWER AUGER (HOLLOW STEM)	GROUND SURFACE	287.59			
		Black silty **TOPSOIL**, roots, (Black Fibrous Peat)	0.00 287.26	1A	CS	
		Grey **ORGANIC SILT**, trace sand, trace gravel	0.33 286.83	1B	CS	
		Grey **SILTY SAND AND GRAVEL**	0.76			
1		Brown and grey **SANDY SILT**, trace gravel	0.91 286.22	2A	CS	MH
2		Brown **SANDY SILT & GRAVEL**, occasional medium sand seam, cobbles	1.37 284.39	2B 3A	CS CS	
3–6	POWER AUGER (HOLLOW STEM) AIR ROTARY (UNCASED)	Grey fractured **LIMESTONE BEDROCK**	3.20 281.04	3B	CS	
		END OF BOREHOLE	6.55			


ELEVATION
HYDRAULIC CONDUCTIVITY, k, cm/s
10^-6
10^-5
10^-4
10^-3
WATER CONTENT PERCENT
Wp
W
Wl
10
20
30
40
249.8
287
286
285
284
283
282
INSTALLATION AND GROUNDWATER OBSERVATIONS
MW 17S
MW 17D
Top of Pipe Elev. 288.62
Well casing (229mm) to 0.76m
08/04/00
Grout
Bentonite
Riser Pipe
Well Sreen
Top of Pipe Elev. 288.74
Well casing (300mm) to 0.91m
08/04/00
Grout
Well casing (114mm) to 6.55m
(WL Enc)
Riser Pipe
Bentonite
Filter Sand
Well Sreen

Water level measured in Well at Elev. 287.50m Sept. 4, 2000

Water level encountered in borehole at elev. 286.71m depth during drilling Aug. 19, 2000

Water level measured in Well at Elev. 287.50m Sept. 4, 2000

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: R.A.

CHECKED: RW

PROJECT: 001-3105-1

RECORD OF BOREHOLE 18

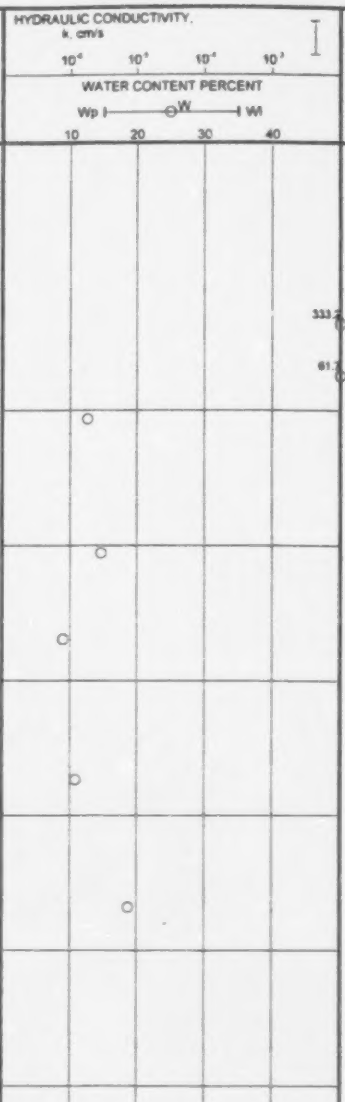
SHEET 1 OF 1

LOCATION: - SEE LOCATION PLAN -

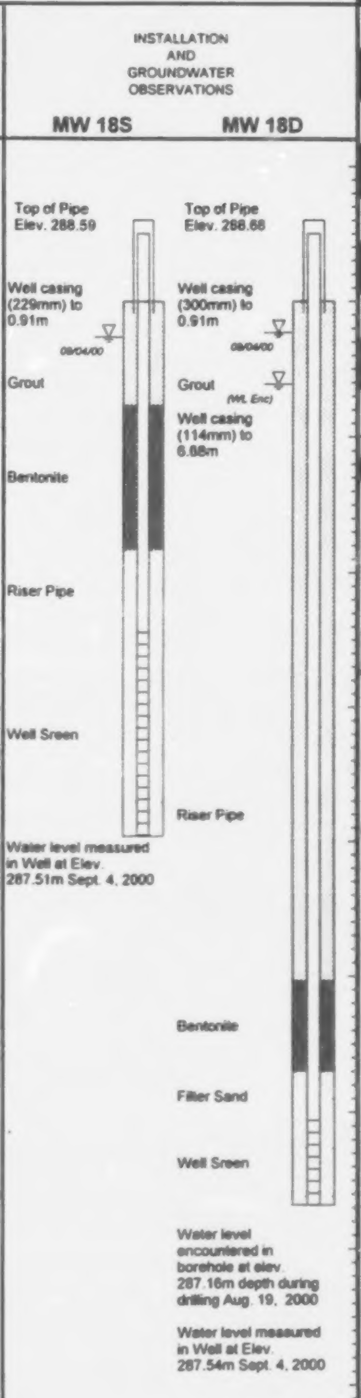
DATUM: GEODETIC

SOIL PROFILE

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	ELEV. / DEPTH (m)	SAMPLES NUMBER	TYPE	ADDITIONAL LAB. TESTING
		GROUND SURFACE	287.77			
0	POWER AUGER (HOLLOW STEM)	Black **FIBROUS PEAT**	0.00 287.50	1A	CS	
		Brown, grey **ORGANIC SILT**, trace roots, trace gravel, cobbles	0.27 286.86	1B 2	CS CS	
1		Grey to brown **SANDY SILT**	0.91 286.25			
		Grey to brown **SILT**, some sand	1.52 285.64	3A	CS	MH
2		Brown **SANDY SILT & GRAVEL**, occasional piece of broken limestone, occasional mesium sand seam, cobbles	2.13 283.50	3B 4	CS CS	
4		Grey medium to coarse **SAND**	4.27 283.14	5	CS	
5	AIR ROTARY (UNCASED)	Grey fractured **LIMESTONE BEDROCK**	4.63 281.09			
		END OF BOREHOLE	6.68			



INSTALLATION AND GROUNDWATER OBSERVATIONS



MW 18S

Top of Pipe Elev. 288.59

Well casing (229mm) to 0.91m

Grout

Bentonite

Riser Pipe

Well Sreen

Water level measured in Well at Elev. 287.51m Sept. 4, 2000

MW 18D

Top of Pipe Elev. 288.68

Well casing (300mm) to 0.91m

Grout

Well casing (114mm) to 6.68m

Riser Pipe

Bentonite

Filter Sand

Well Sreen

Water level encountered in borehole at elev. 287.16m depth during drilling Aug. 19, 2000

Water level measured in Well at Elev. 287.54m Sept. 4, 2000

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: R.A.
CHECKED: RW

LDN ENV 001-3105.GPJ GLDR_LDN.GDT 17-09-00 DATA INPUT B Galleme

PROJECT: 001-3105-1

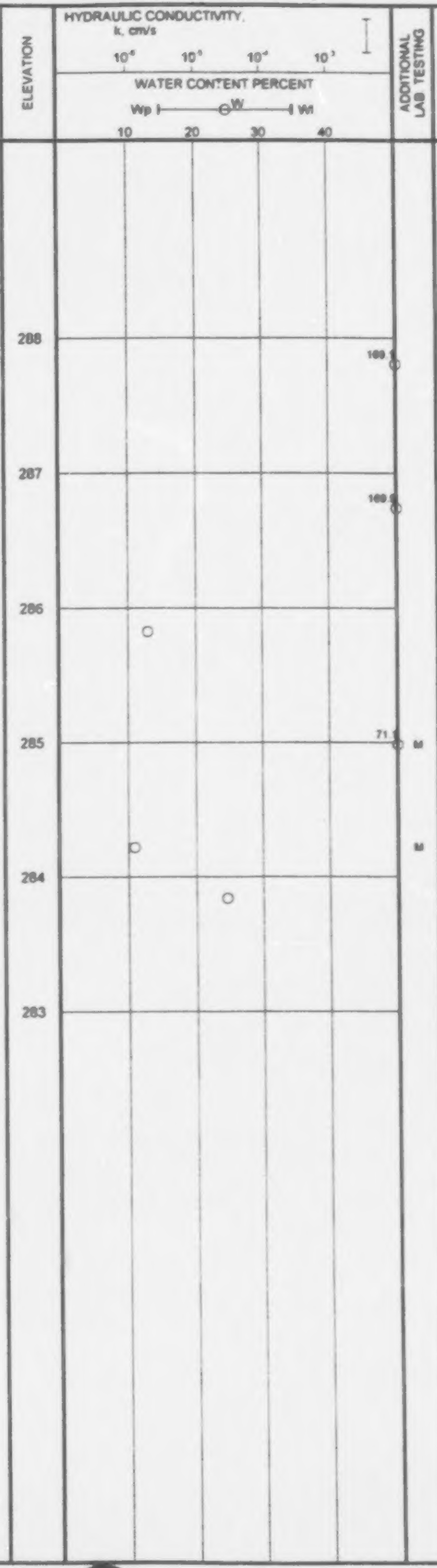
LOCATION: - SEE LOCATION PLAN -

RECORD OF BOREHOLE 19

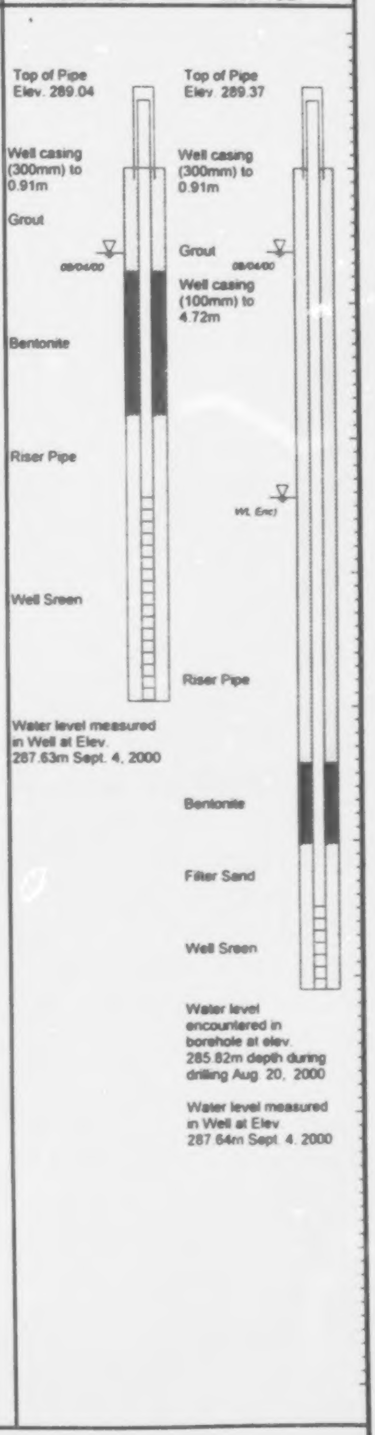
SHEET 1 OF 1

DATUM GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	ELEV DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE
0		GROUND SURFACE	288.26		
	POWER AUGER (HOLLOW STEM)	Black **FIBROUS PEAT**, with roots	0.00 286.13	1 2A	CS CS
2		Brown **SANDY SILT**, trace gravel	2.13 285.52	2B	CS
3		Grey **SAND AND GRAVEL**	2.74 284.45	3A	CS
4		Grey to brown **SAND AND GRAVEL**, some silt, with broken pieces of limestone rock	3.81 283.99	3B	CS
		Grey **SAND AND GRAVEL**	4.27 283.69	4	CS
5	AIR ROTARY (UNCASED)	Grey fractured **LIMESTONE BEDROCK**	4.57 282.16		
6		END OF BOREHOLE	6.10		



INSTALLATION AND GROUNDWATER OBSERVATIONS


MW 19S
MW 19D
Top of Pipe Elev. 289.04
Well casing (300mm) to 0.91m
Grout
08/04/00
Bentonite
Riser Pipe
Well Sreen
Top of Pipe Elev. 289.37
Well casing (300mm) to 0.91m
Grout
08/04/00
Well casing (100mm) to 4.72m
WL Enc)
Riser Pipe
Bentonite
Filter Sand
Well Sreen

Water level measured in Well at Elev. 287.63m Sept. 4, 2000

Water level encountered in borehole at elev. 285.82m depth during drilling Aug. 20, 2000

Water level measured in Well at Elev. 287.64m Sept. 4. 2000

DEPTH SCALE
1 : 50

Golder Associates

LOGGED R.A.
CHECKED RW

PROJECT: 001-3105-1

LOCATION: - SEE LOCATION PLAN -

RECORD OF BOREHOLE 20

SHEET 1 OF 1

DATUM: GEODETIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	ELEV. / DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	ELEVATION
		GROUND SURFACE	288.05			
0	POWER AUGER (HOLLOW STEM)	Black sandy silt **TOPSOIL**	0.00	1A	CS	288
			287.71 0.34			
		Brown **SILTY SAND**, trace gravel, with silt seams		1B	CS	
1				2A	CS	287
			286.22 1.83			
2		Brown **SILTY SAND AND GRAVEL**		2B	CS	286
			285.61 2.44			
3		Brown **SILTY SAND AND GRAVEL**, with layers of broken pieces of limestone rock		3A	CS	285
				3B	CS	
			284.39 3.66			
4		Grey fractured **LIMESTONE BEDROCK**				284
5	AIR ROTARY (UNCASED)					283
			282.41 5.64			
		END OF BOREHOLE				
6						
7						
8						
9						

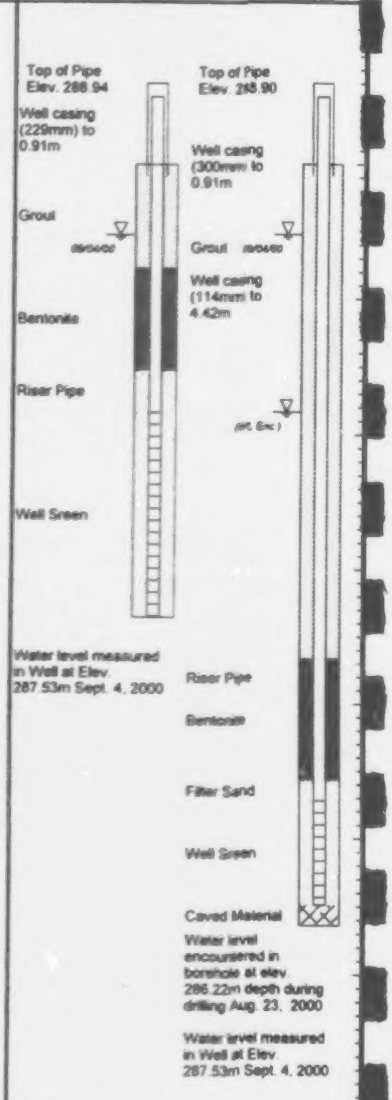
HYDRAULIC CONDUCTIVITY, k, cm/s: 10⁻⁶ 10⁻⁵ 10⁻⁴ 10⁻³

WATER CONTENT PERCENT: Wp ⊢—○W—⊣ Wl: 10 20 30 40

ADDITIONAL LAB TESTING

INSTALLATION AND GROUNDWATER OBSERVATIONS

MW 20S **MW 20D**


Top of Pipe Elev. 288.94
Well casing (229mm) to 0.91m
Grout
Bentonite
Riser Pipe
Well Sreen
Top of Pipe Elev. 288.90
Well casing (300mm to 0.91m
Grout
Well casing (114mm to 4.42m
Riser Pipe
Bentonite
Filter Sand
Well Sreen
Caved Material

Water level measured in Well at Elev. 287.53m Sept. 4, 2000

Water level encountered in borehole at elev. 286.22m depth during drilling Aug. 23, 2000

Water level measured in Well at Elev. 287.53m Sept. 4, 2000

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: R.A./T.P.
CHECKED: RW

LDN_ENV 001-3105.GPJ GLDR_LDN.GDT 17-09-00 DATA INPUT: B Gellerne

PROJECT: 001-3105-1

LOCATION: - SEE LOCATION PLAN -

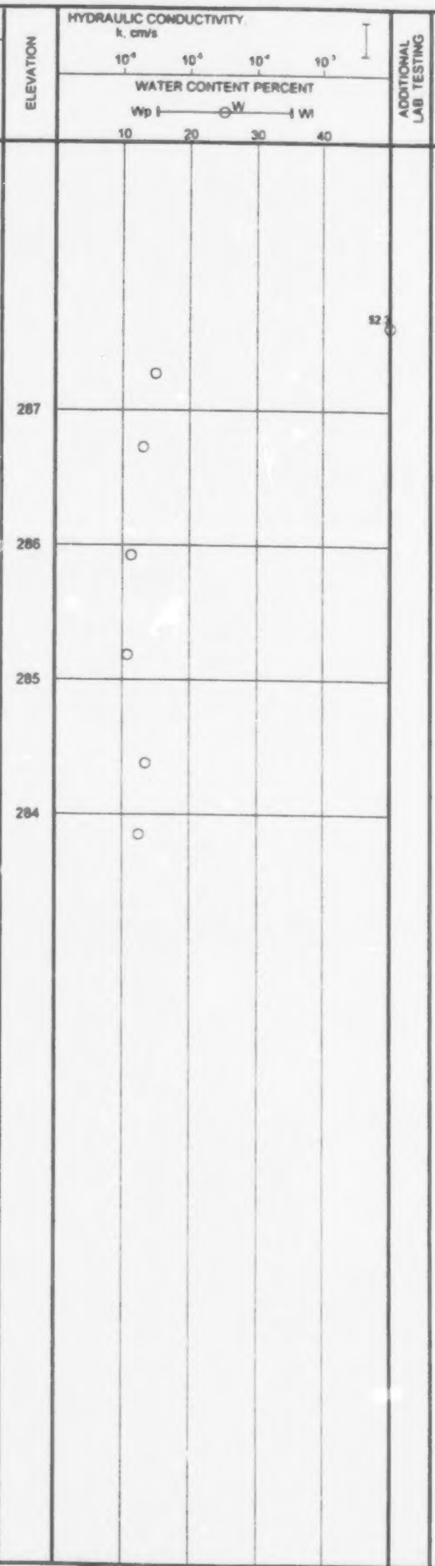
RECORD OF BOREHOLE 21

SHEET 1 OF 1

DATUM: GEODETIC

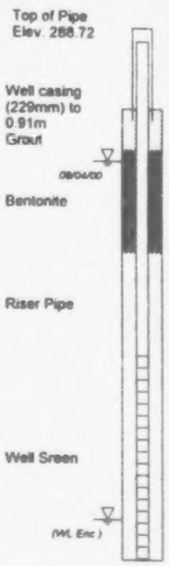
BORING METHOD: POWER AUGER (UNCASED)

DEPTH SCALE METRES	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE
	Stratigraphy inferred from BH13				
0	GROUND SURFACE		287.78		
	Black sandy silt **TOPSOIL**	▨	0.00 287.46	1A	CS
	Brown **SILTY FINE TO MEDIUM SAND**		0.32 286.99	1B	CS
1	Brown **SILTY SAND AND GRAVEL**, trace clay, with cobbles		0.79	1C	CS
2			285.49	2A	CS
	Brown **SAND AND GRAVEL**, trace silt, cobbles		2.29 284.88	2B	CS
3	Brown **SANDY SILT AND GRAVEL**, some clay, occasional wet sand seams		2.90 283.91	3A	CS
4	Highly weathered, broken pieces of **LIMESTONE**		3.87	3B	CS
	Grey fractured **LIMESTONE BEDROCK**		3.96 283.36		
	END OF BOREHOLE		4.42		
5					
6					
7					
8					
9					



INSTALLATION AND GROUNDWATER OBSERVATIONS

MW21



Water level encountered in borehole at elev. 286.71m depth during drilling Aug. 17, 2000

Water level measured in Well at Elev. 287.39m Sept. 4, 2000

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: R.A.

CHECKED: RW

LDN_ENV 001-3105.GPJ GLDR_LDN.GDT 17-08-00 DATA INPUT B Gallarno

PROJECT: 001-3105-1

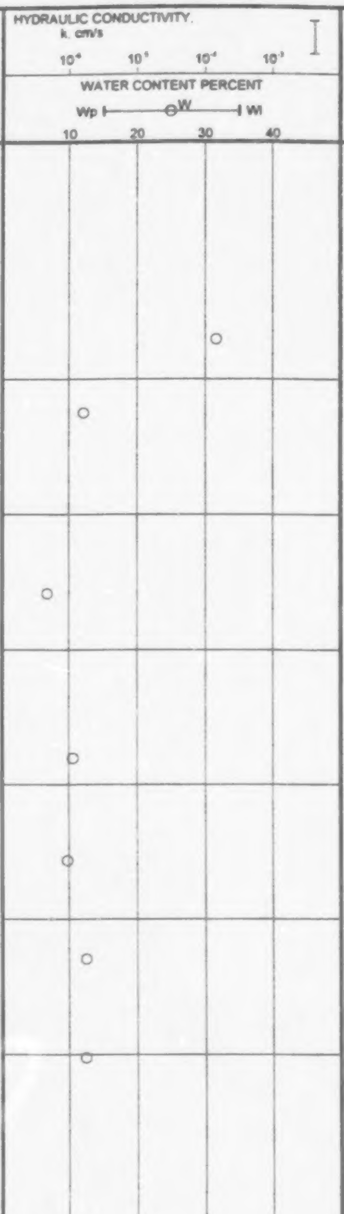
LOCATION: - SEE LOCATION PLAN -

RECORD OF BOREHOLE 22

SHEET 1 OF 1

DATUM: GEODETIC

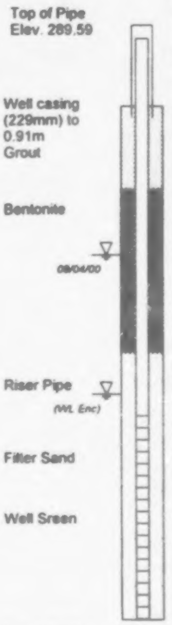
DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	ELEVATION
0		GROUND SURFACE		288.55			
	POWER AUGER (HOLLOW STEM)	Black sandy silt TOPSOIL		0.00	1A	CS	
		Black and brown topsoil, with brown clayey silt, (FILL)		288.06 0.49	1B	CS	288
1		Brown SILTY SAND, trace gravel		287.54 1.01	1C	CS	
2		Brown SILTY SAND AND GRAVEL, occasional wet silt seam		287.24 1.31	2	CS	287
3					3A	CS	286
4					3B	CS	285
		Brown SILTY SAND AND GRAVEL, with layers of broken pieces of limestone rock		284.13 4.42	4A	CS	284
5		Grey fractured LIMESTONE BEDROCK		283.28 5.27	4B	CS	283
6		END OF BOREHOLE		282.67 5.88			
7							
8							
9							



ADDITIONAL LAB TESTING

INSTALLATION AND GROUNDWATER OBSERVATIONS

MW 22



Water level encountered in borehole at elev. 287.86m depth during drilling Aug. 18, 2000

Water level measured in Well at Elev. 287.45m Sept. 4, 2000

LDN ENV 001-3105.GPJ GLDR LDN.GDT 17-09-00 DATA INPUT: B Galleme

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: R.A.

CHECKED: RW

PROJECT: 001-3105-1

LOCATION: - SEE LOCATION PLAN -

RECORD OF BOREHOLE 23

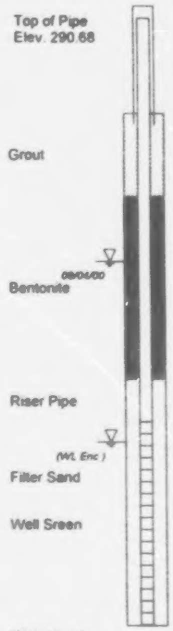
SHEET 1 OF 1

DATUM: GEODETIC

DEPTH SCALE METRES		SOIL PROFILE			SAMPLES		ELEVATION	HYDRAULIC CONDUCTIVITY, k, cm/s: 10^{-6} 10^{-5} 10^{-4} 10^{-3} / WATER CONTENT PERCENT: Wp ⊢—○W—⊣ Wl: 10 20 30 40	ADDITIONAL LAB. TESTING
		DESCRIPTION	STRATA PLOT	ELEV / DEPTH (m)	NUMBER	TYPE			
		GROUND SURFACE		289.99					
0	POWER AUGER (HOLLOW STEM)	Brown sand silt, trace gravel, (FILL)		0.00 289.69	1A	CS			
		Brown TOPSOIL, with peat		0.30 289.08	1B	CS			
1		Brown SILTY SAND, trace gravel		0.91	1C	CS	289		
		Black PEAT, some roots		1.07 288.47	2A	CS			
2		Brown SANDY SILT AND GRAVEL		1.52 287.55	2B	CS	288		
3		Brown SILT, trace sand, trace gravel.		2.44 286.94	3A	CS	287		
		Brown SILTY SAND AND GRAVEL, with broken pieces of limestone		3.05 286.18	3B	CS			
4		END OF BOREHOLE		3.81					
5									
6									
7									
8									
9									

INSTALLATION AND GROUNDWATER OBSERVATIONS

MW 23



Water level encountered in borehole at elev 287.55m depth during drilling Aug. 23, 2000

Water level measured in Well at Elev. 288.89m Sept. 4, 2000

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: T.P.

CHECKED: RW

LDN_ENV 001-3105.GPJ GLDR_LDN.GDT 17-[illegible] DATA INPUT: B [illegible]

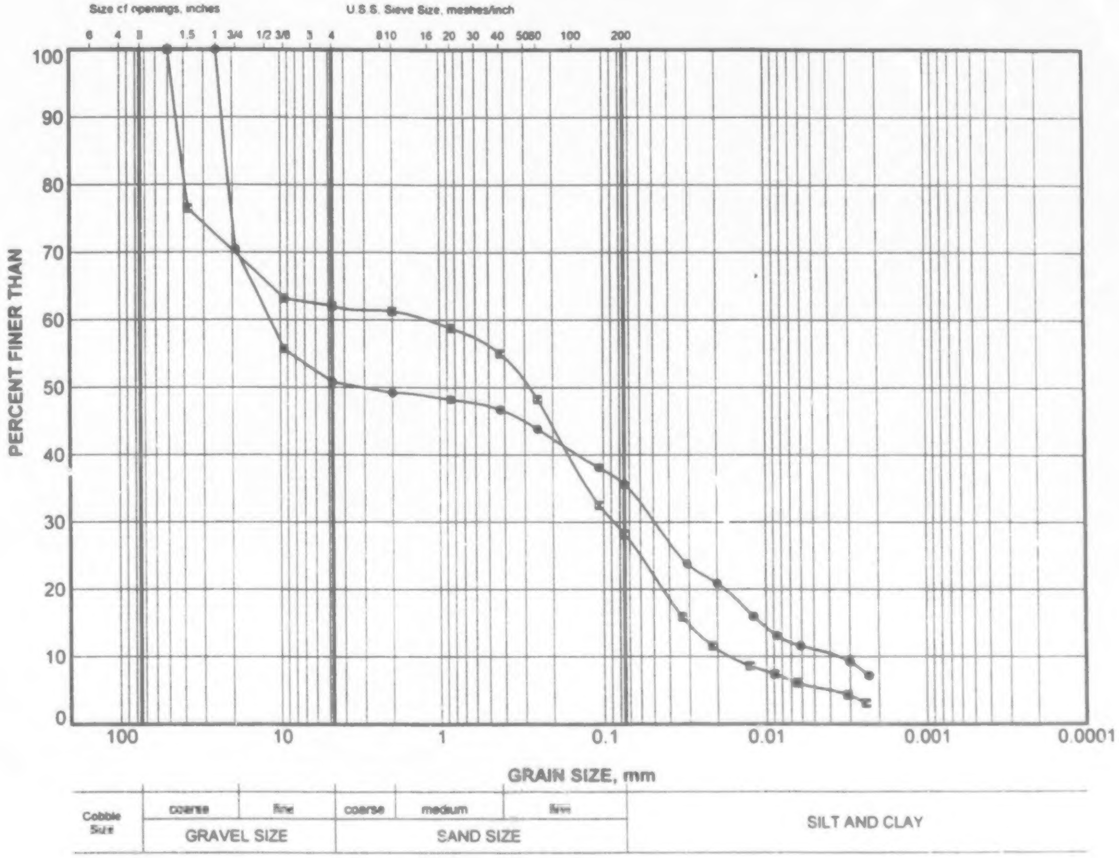
APPENDIX B

GRAIN SIZE CURVES

GRAIN SIZE DISTRIBUTION

FIGURE B-1

SILTY SAND and GRAVEL



LEGEND

SYMBOL	BOREHOLE	SAMPLE	ELEV (m)
●	1	1S-B	287.0
▣	3	1B	286.4

LDN GSD 001-3105.GPJ GLDR LDN.GDT 18-09-00 DATA INPUT B Gallermo

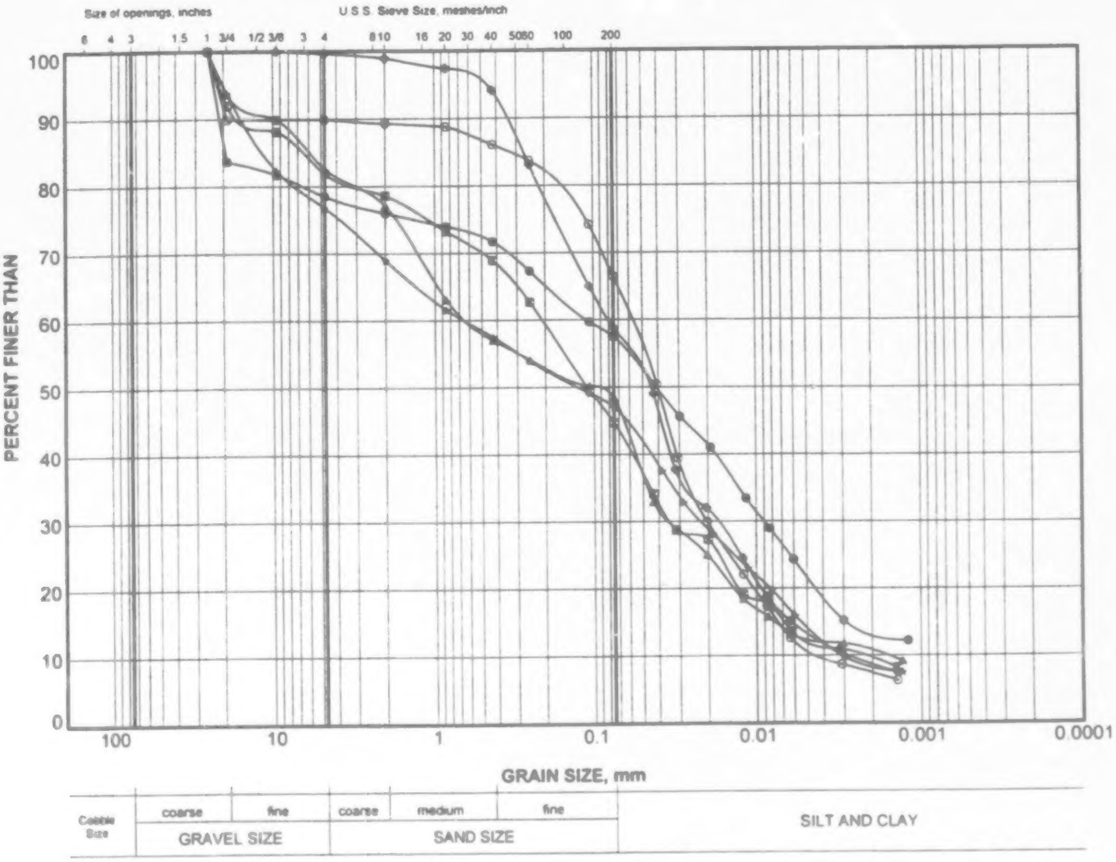
Project: 001-3105-1

Golder Associates

GRAIN SIZE DISTRIBUTION

FIGURE B-2

SANDY SILT, trace to some gravel



LEGEND

SYMBOL	BOREHOLE	SAMPLE	ELEV (m)
●	9	1B	285.2
⧗	12	2A	287.2
▲	12	3A	285.8
★	15	2A	285.8
⊙	17	2A	286.4
⊕	19	2B	285.8

LDN GSD 001-3105 GPJ GLDR LDN GDT 18-09-00 DATA INPUT B Gallerno

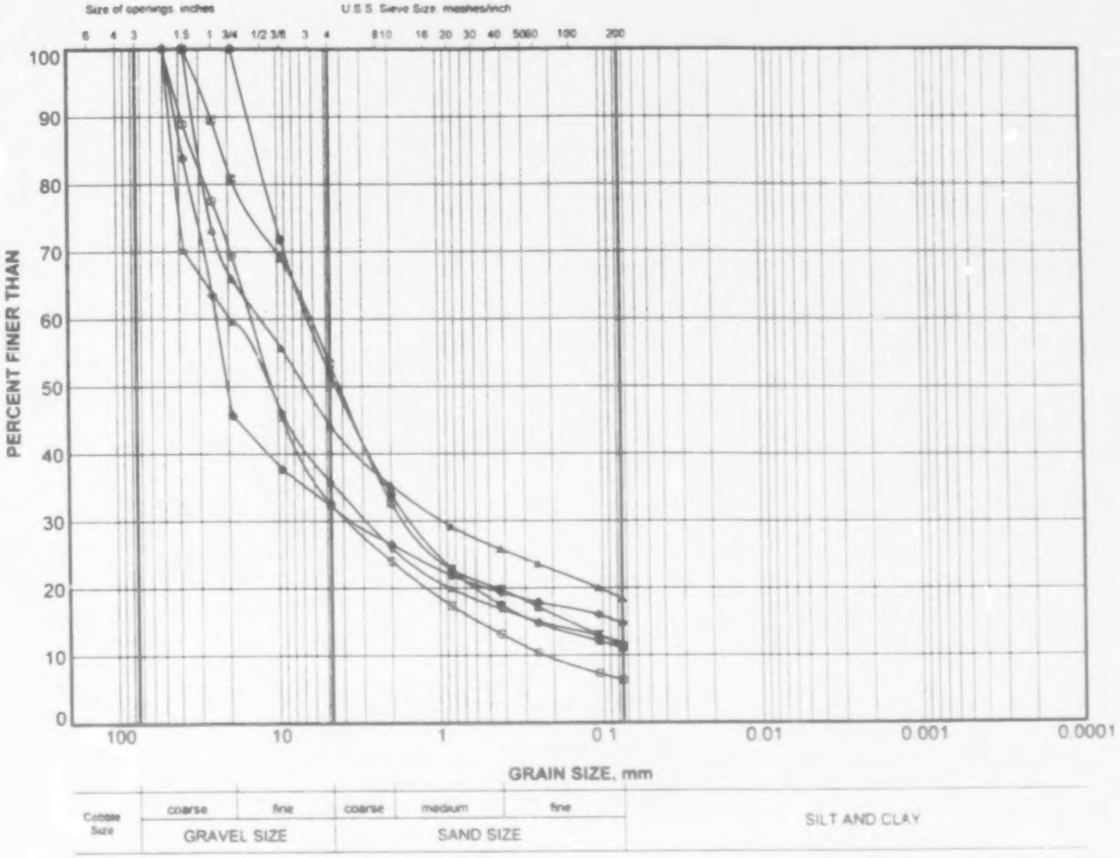
Project: 001-3105-1

Golder Associates

GRAIN SIZE DISTRIBUTION

FIGURE B-3

SAND and GRAVEL, trace to some silt



LEGEND

SYMBOL	BOREHOLE	SAMPLE	ELEV (m)
●	7	5A	282.2
⧗	11	3A	284.2
▲	13	2B	285.4
★	14	2A	287.1
⊙	19	3A	285.0
✧	19	3B	284.2

LDN GSD 001-3105.GPJ GLDR_LDN.GDT 18-09-00 DATA INPUT B Gallerno

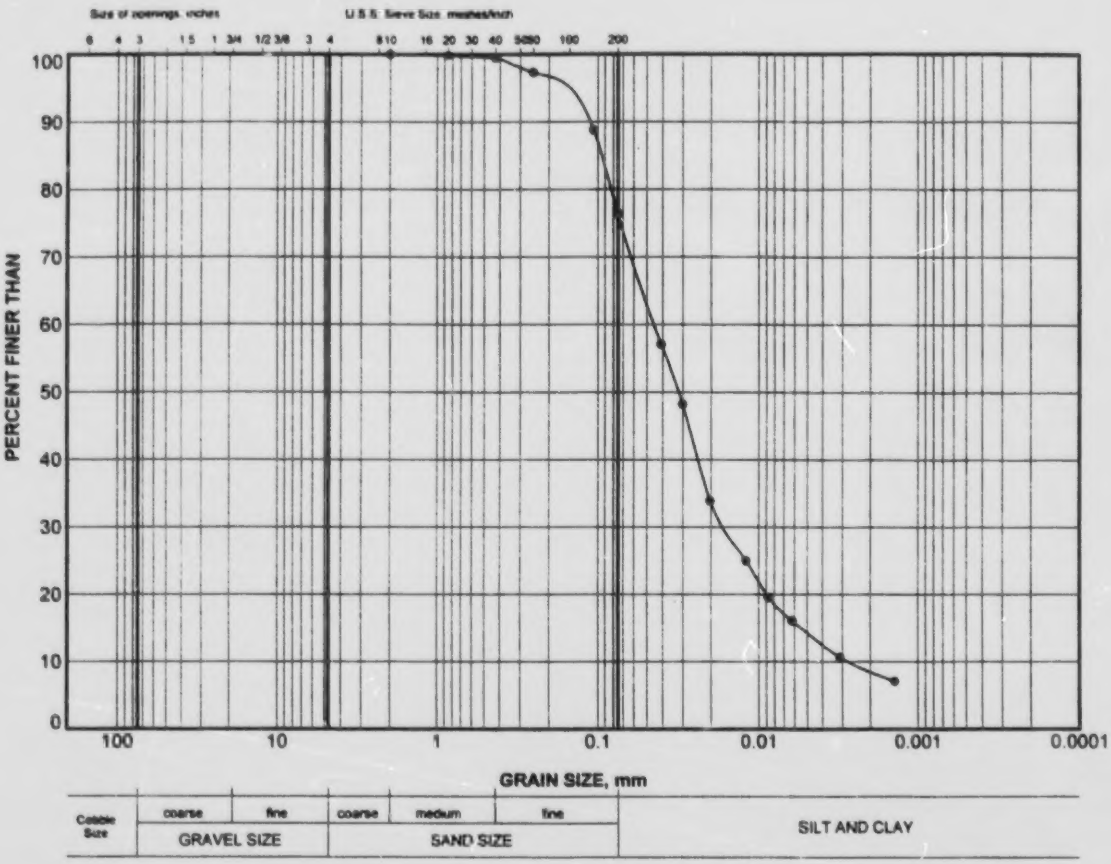
Project: 001-3105-1

Golder Associates

GRAIN SIZE DISTRIBUTION

FIGURE B-4

SILT, some sand



LEGEND

SYMBOL	BOREHOLE	SAMPLE	ELEV (m)
●	18	3A	285.9

LDN GSD 001-3105.GPJ GLDR LDN.GDT 18-09-00 DATA INPUT B Guillerme

Project: 001-3105-1

Golder Associates

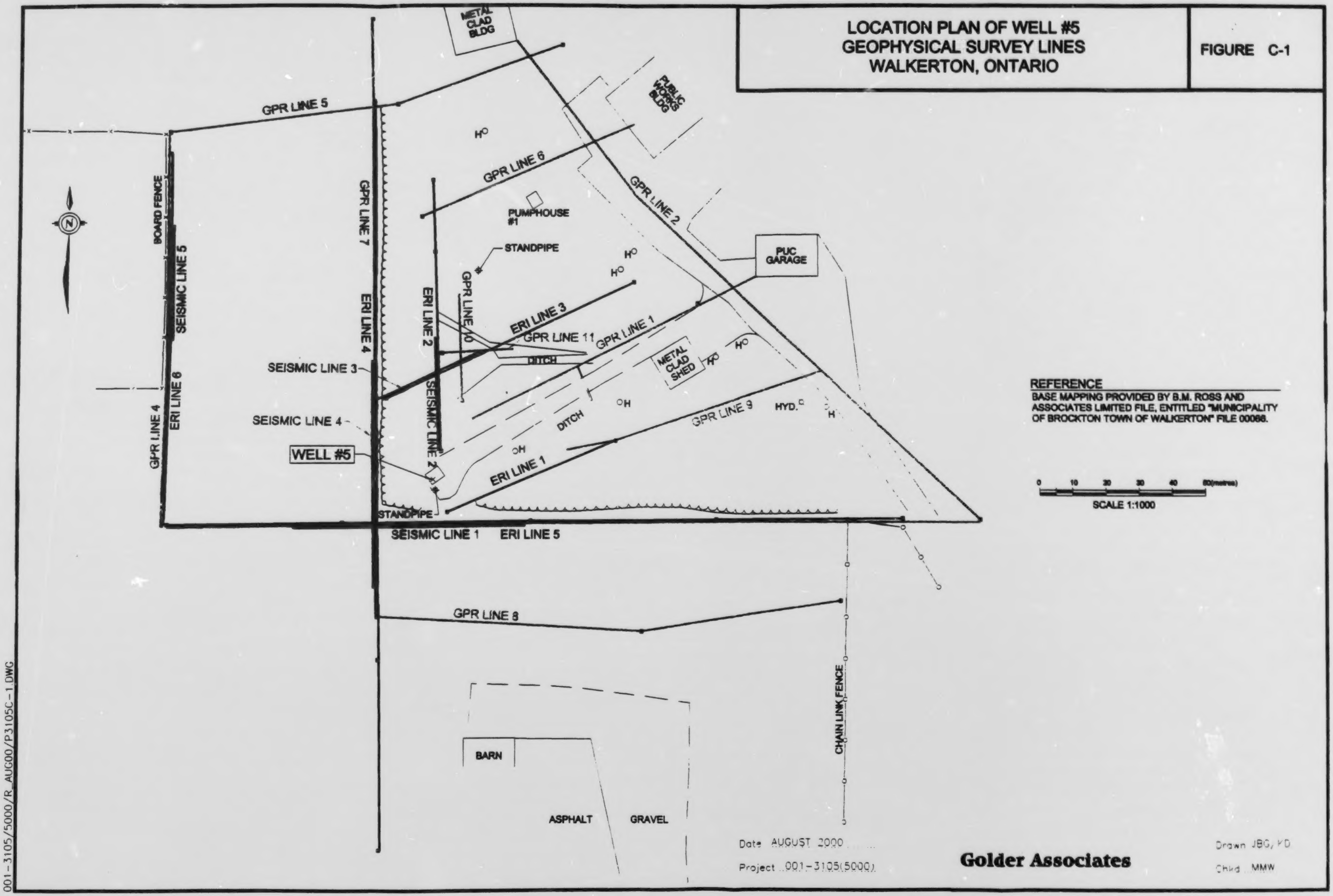
3

APPENDIX C

GEOPHYSICAL CROSS SECTIONS

LOCATION PLAN OF WELL #5
GEOPHYSICAL SURVEY LINES
WALKERTON, ONTARIO

FIGURE C-1


METAL CLAD BLDG
PUBLIC WORKS BLDG
GPR LINE 5
GPR LINE 6
GPR LINE 2
GPR LINE 7
BOARD FENCE
SEISMIC LINE 5
PUMPHOUSE #1
STANDPIPE
PUC GARAGE
GPR LINE 10
ERI LINE 2
ERI LINE 4
ERI LINE 3
GPR LINE 11
GPR LINE 1
DITCH
METAL CLAD SHED
SEISMIC LINE 3
SEISMIC LINE 2
ERI LINE 6
GPR LINE 4
SEISMIC LINE 4
GPR LINE 9
HYD.
WELL #5
ERI LINE 1
STANDPIPE
SEISMIC LINE 1
ERI LINE 5
GPR LINE 8
CHAIN LINK FENCE
BARN
ASPHALT
GRAVEL
N
0
10
20
30
40
50(metres)
SCALE 1:1000

REFERENCE

BASE MAPPING PROVIDED BY B.M. ROSS AND ASSOCIATES LIMITED FILE, ENTITLED "MUNICIPALITY OF BROCKTON TOWN OF WALKERTON" FILE 00066.

Date AUGUST 2000

Project 001-3105(5000)

Golder Associates

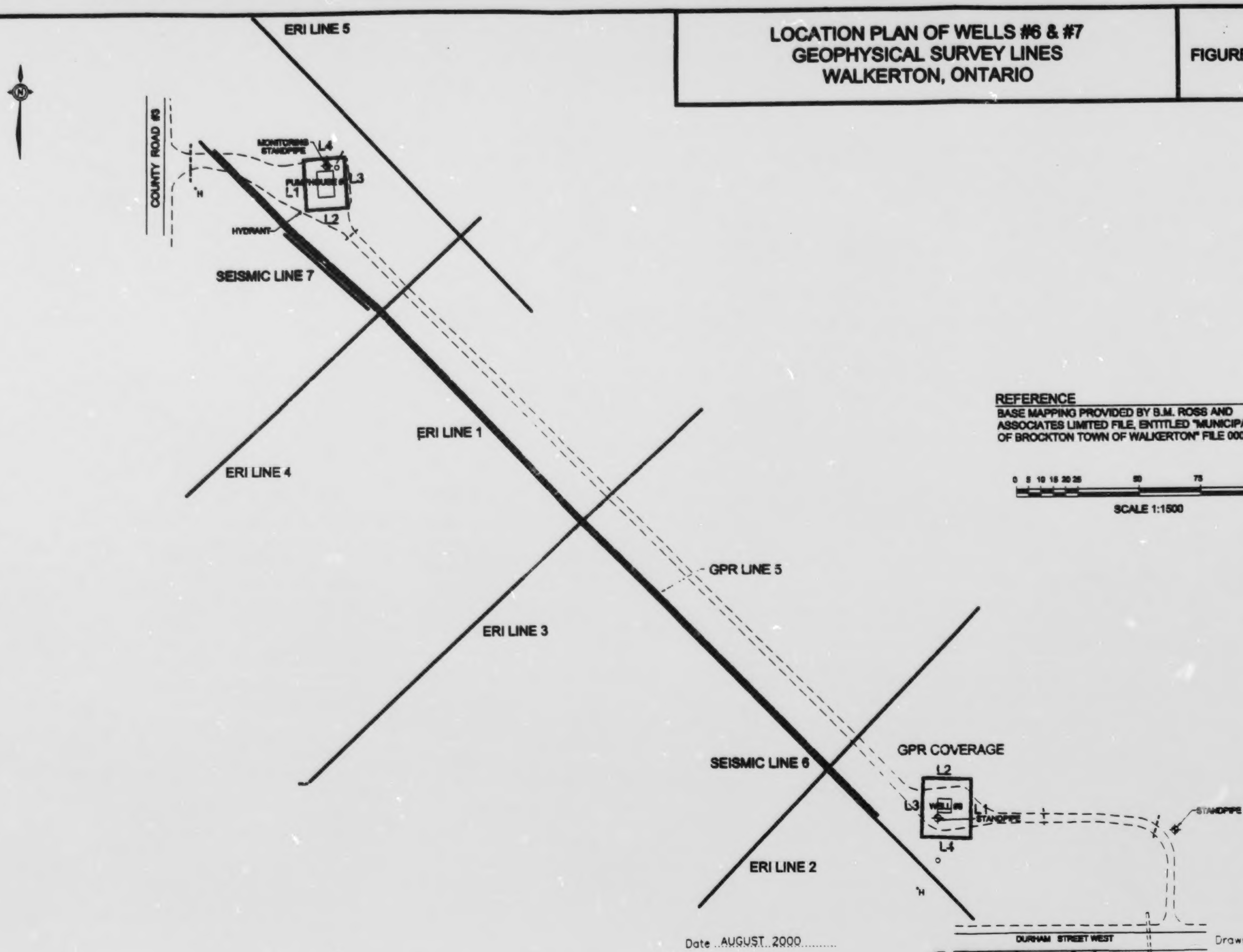
Drawn JBG, PD

Chkd MMW

001-3105/5000/R_AUG00/P3105C-1.DWG

LOCATION PLAN OF WELLS #6 & #7
GEOPHYSICAL SURVEY LINES
WALKERTON, ONTARIO

FIGURE C-2


N
ERI LINE 5
COUNTY ROAD #3
MONITORING STANDPIPE
L4
L3
L1
L2
H
HYDRANT
SEISMIC LINE 7
ERI LINE 1
ERI LINE 4
GPR LINE 5
ERI LINE 3
GPR COVERAGE
SEISMIC LINE 6
L2
L3
WELL #6
L1
STANDPIPE
L4
STANDPIPE
ERI LINE 2
H
DURHAM STREET WEST
0 5 10 15 20 25 50 75 100m

REFERENCE

BASE MAPPING PROVIDED BY B.M. ROSS AND ASSOCIATES LIMITED FILE, ENTITLED "MUNICIPALITY OF BROCKTON TOWN OF WALKERTON" FILE 00086.

SCALE 1:1500

Date AUGUST 2000

Project 001-3105(5000)

Golder Associates

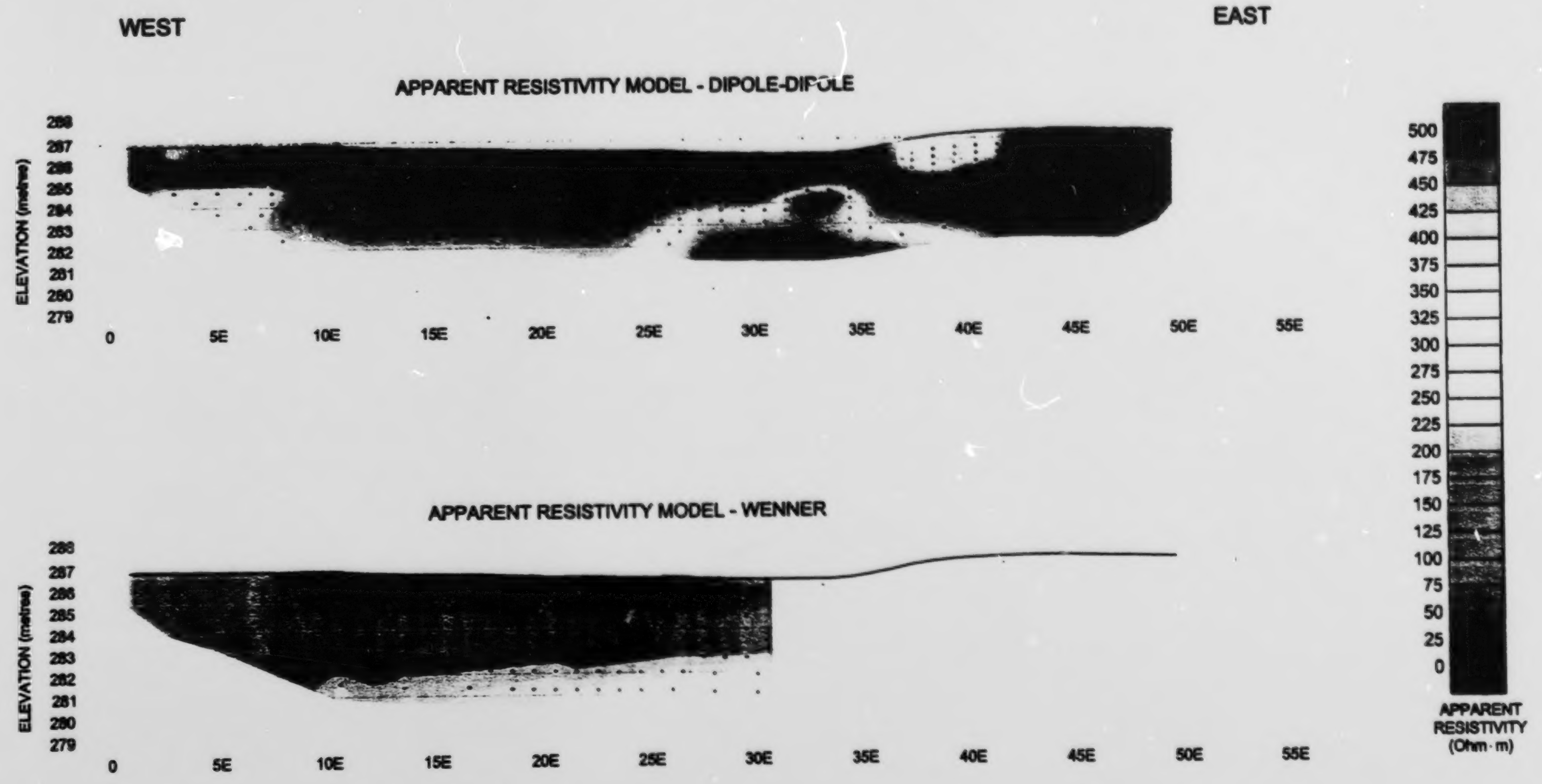
Drawn JBG/KD

Chkd MMW

001-3105/5000/R_AUG00/P3105C-2.DWG

ERI SURVEY RESULTS
WELL #5 - LINE 1
WALKERTON, ONTARIO

FIGURE C-3



0 5 10 15metres
SCALE 1:250

NOTES

1. THIS FIGURE IS TO BE EXAMINED IN CONJUNCTION WITH THE ACCOMPANYING REPORT.
2. ALL WENNER AND DIPOLE DIPOLE DATA WERE ACQUIRED WITH THE STING/SWIFT ELECTRICAL IMAGING SYSTEM.
3. DATA WERE MODELLED USING THE "RES2DINV" SOFTWARE PACKAGE BY DR. M.H. LOKE (ZD. INVERSION)
4. RELATIVE LINE POSITION ELEVATIONS SURVEYED BY GOLDER ASSOCIATES JUNE 2000.
5. ELEVATION TAKEN FROM BM. ROSS AND ASSOCIATES LIMITED PLAN OF WELL #5, FILE00086, JULY 6, 2000.
6. SEE FIGURE C1 FOR LINE POSITION.

Date AUGUST, 2000
Project 001-3105(5000)

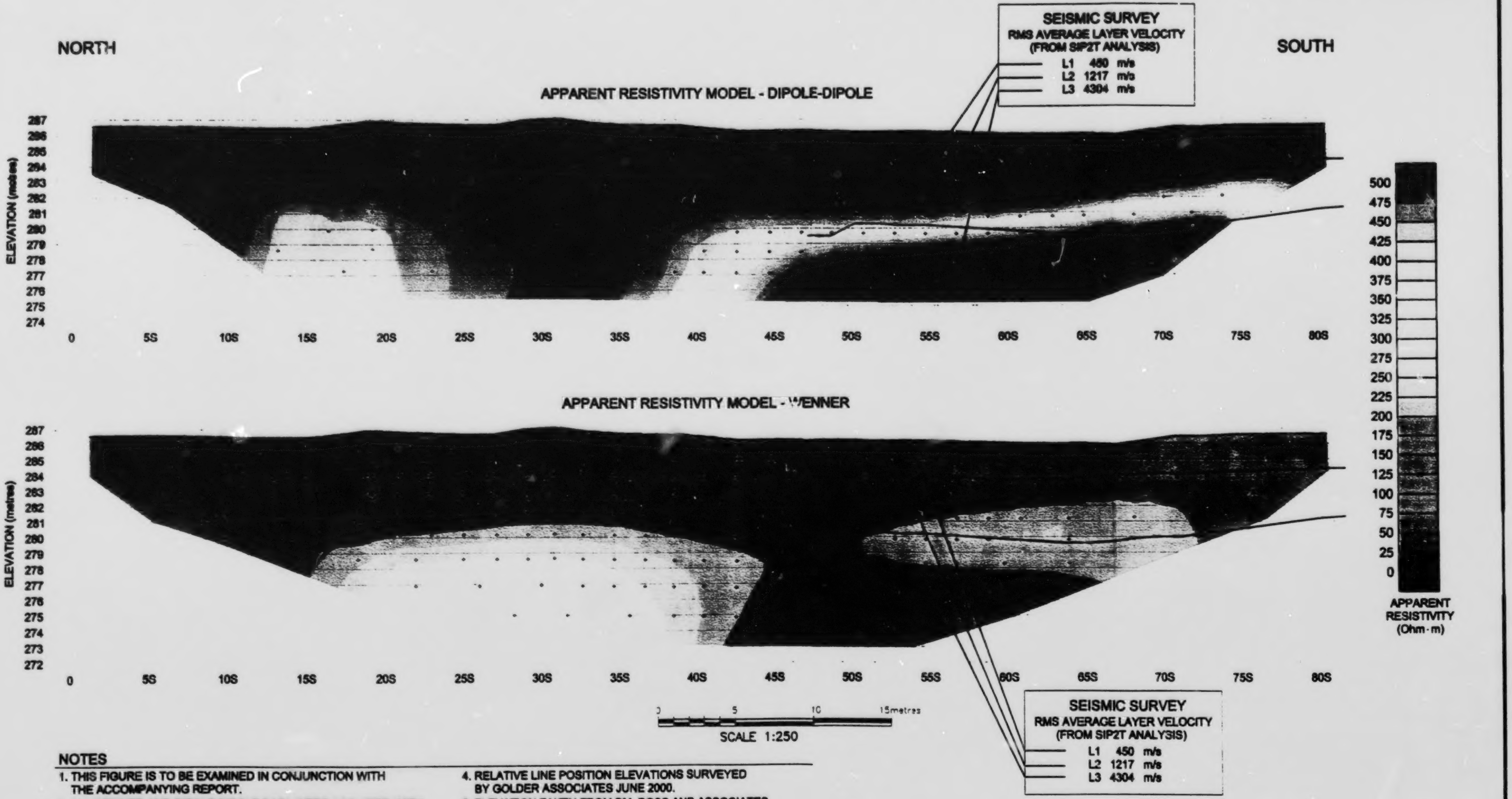
Golder Associates

Drawn JBG, KD
Chkd MMW

001 3105/5000/R_AUG00/P3105C-3.DWG

ERI AND SEISMIC SURVEY RESULTS
WELL #5 - LINE 2
WALKERTON, ONTARIO

FIGURE C-4



NOTES

1. THIS FIGURE IS TO BE EXAMINED IN CONJUNCTION WITH THE ACCOMPANYING REPORT.
2. ALL WENNER AND DIPOLE DIPOLE DATA WERE ACQUIRED WITH THE STING/SWIFT ELECTRICAL IMAGING SYSTEM.
3. DATA WERE MODELLED USING THE "RES2DINV" SOFTWARE PACKAGE BY DR. M.H. LOKE (ZD. INVERSION)
4. RELATIVE LINE POSITION ELEVATIONS SURVEYED BY GOLDER ASSOCIATES JUNE 2000.
5. ELEVATION TAKEN FROM BM. ROSS AND ASSOCIATES LIMITED PLAN OF WELL #5, FILE00086, JULY 6, 2000.
6. SEE FIGURE C1 FOR LINE POSITION.

Date AUGUST 2000

Project 001-3105(5000)

Golder Associates

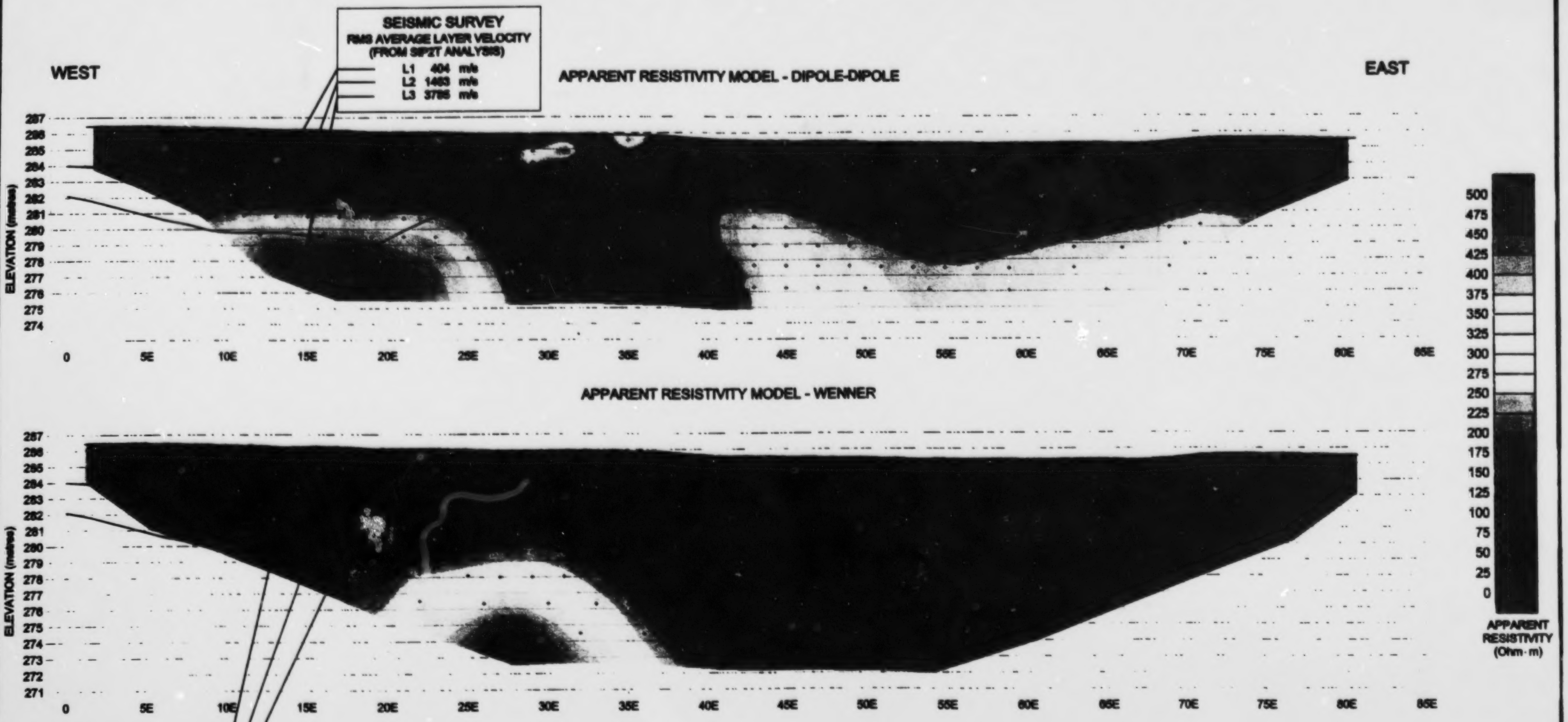
Drawn JBG/KD

Chkd MMW

001-3105/5000/R_AUG00/P3105C-4.DWG

ERI AND SEISMIC SURVEY RESULTS
WELL #5 - LINE 3
WALKERTON, ONTARIO

FIGURE C-5



SEISMIC SURVEY
RMS AVERAGE LAYER VELOCITY
(FROM SIP2T ANALYSIS)
L1 404 m/s
L2 1463 m/s
L3 3786 m/s

NOTES

1. THIS FIGURE IS TO BE EXAMINED IN CONJUNCTION WITH THE ACCOMPANYING REPORT.
2. ALL WENNER AND DIPOLE DIPOLE DATA WERE ACQUIRED WITH THE STING/SWIFT ELECTRICAL IMAGING SYSTEM.
3. DATA WERE MODELLED USING THE "RES2DINV" SOFTWARE PACKAGE BY DR. M.H. LOKE (ZD. INVERSION)
4. RELATIVE LINE POSITION ELEVATIONS SURVEYED BY GOLDER ASSOCIATES JUNE 2000.
5. ELEVATION TAKEN FROM BM. ROSS AND ASSOCIATES LIMITED PLAN OF WELL #5, FILE00066, JULY 6, 2000.
6. SEE FIGURE C1 FOR LINE POSITION.

0 5 10 15metres
SCALE 1:250

Date AUGUST 2000
Project 001-3105(5000)

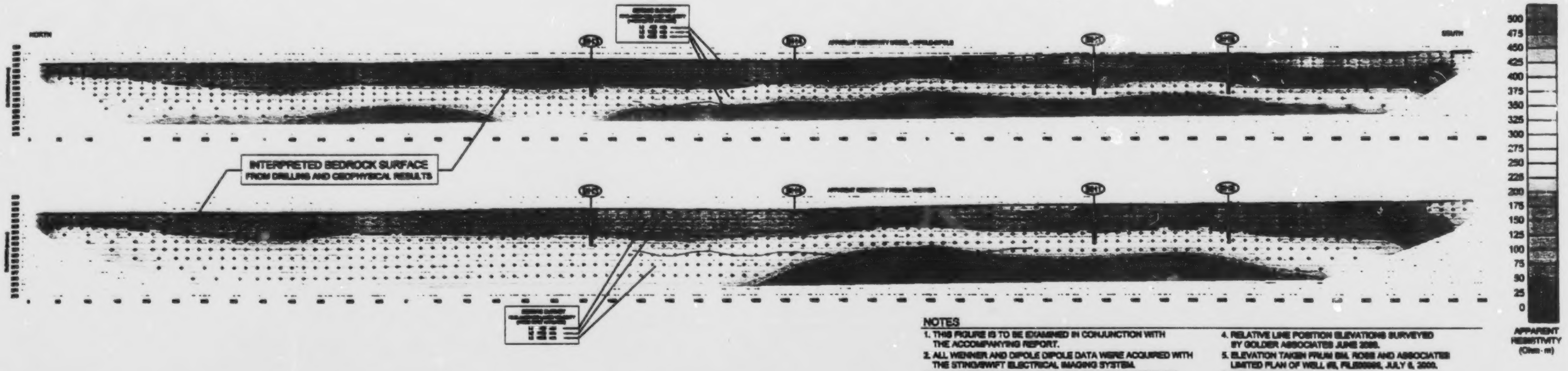
Golder Associates

Drawn JBG, KD
Chk'd MMW

001-3105/5000/R_AUG00/P3105C-5.DWG

ERI AND SEISMIC SURVEY RESULTS
WELL #5 - LINE 4
WALKERTON, ONTARIO

FIGURE C-6



NOTES

1. THIS FIGURE IS TO BE EXAMINED IN CONJUNCTION WITH THE ACCOMPANYING REPORT.
2. ALL WENNER AND DIPOLE DIPOLE DATA WERE ACQUIRED WITH THE STING/SWIFT ELECTRICAL IMAGING SYSTEM.
3. DATA WERE MODELLED USING THE "RES2DINV" SOFTWARE PACKAGE BY DR. M.H. LOKE (2D. INVERSION)
4. RELATIVE LINE POSITION ELEVATIONS SURVEYED BY GOLDER ASSOCIATES JUNE 2000.
5. ELEVATION TAKEN FROM B.M. ROSS AND ASSOCIATES LIMITED PLAN OF WELL #5, FILE[illegible], JULY 6, 2000.
6. SEE FIGURE C1 FOR LINE POSITION.
7. INTERPRETED BEDROCK SURFACE IS BASED ON ERI SURVEY RESULTS AND BOREHOLE RECORDS.

NOTE:
THIS FIGURE IS DRAWN AT 1:250 SCALE AND PLOTTED AT 1:700 FOR REPORTING PURPOSES.

Date SEPT. 2000
Project 001-3105(5000)

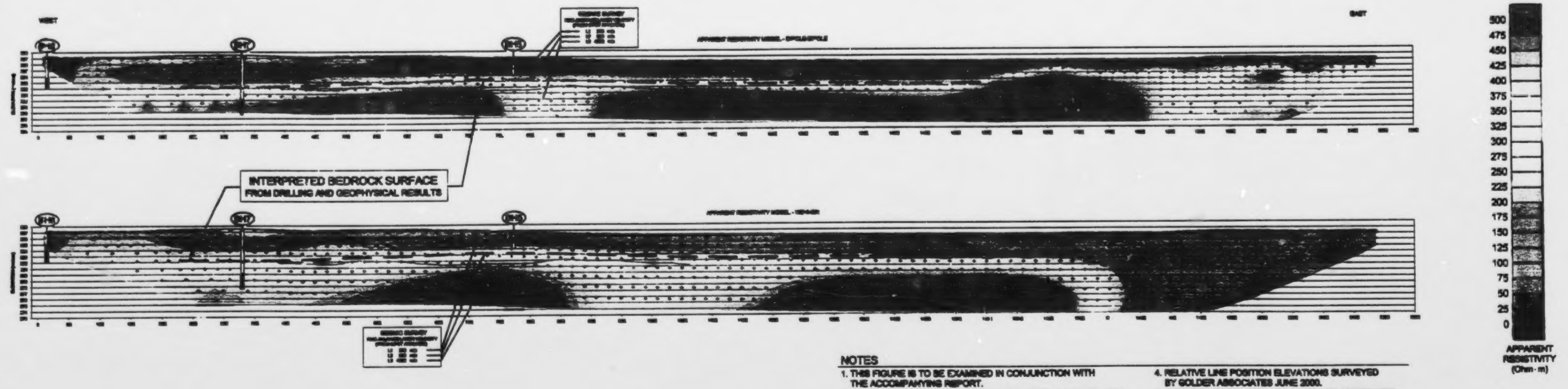
Golder Associates

Drawn JBG/KD
Chkd MMW

P3105C6-11x17.DWG

ERI AND SEISMIC SURVEY RESULTS
WELL #5 - LINE 5
WALKERTON, ONTARIO

FIGURE C-7



NOTES

1. THIS FIGURE IS TO BE EXAMINED IN CONJUNCTION WITH THE ACCOMPANYING REPORT.
2. ALL WENNER AND DIPOLE DIPOLE DATA WERE ACQUIRED WITH THE STING/SWIFT ELECTRICAL IMAGING SYSTEM.
3. DATA WERE MODELLED USING THE "RES2DINV" SOFTWARE PACKAGE BY DR. M.H. LOKE (2D. INVERSION)
4. RELATIVE LINE POSITION ELEVATIONS SURVEYED BY GOLDER ASSOCIATES JUNE 2000.
5. ELEVATION TAKEN FROM B.M. ROSS AND ASSOCIATES LIMITED PLAN OF WELL #5, FILE00006, JULY 6, 2000.
6. SEE FIGURE C1 FOR LINE POSITION.
7. INTERPRETED BEDROCK SURFACE IS BASED ON ERI SURVEY RESULTS AND BOREHOLE RECORDS.

NOTE:
THIS FIGURE IS DRAWN AT 1:250 SCALE AND PLOTTED AT 1:700 FOR REPORTING PURPOSES.

Date SEPT. 2000
Project 001-3105(5000)

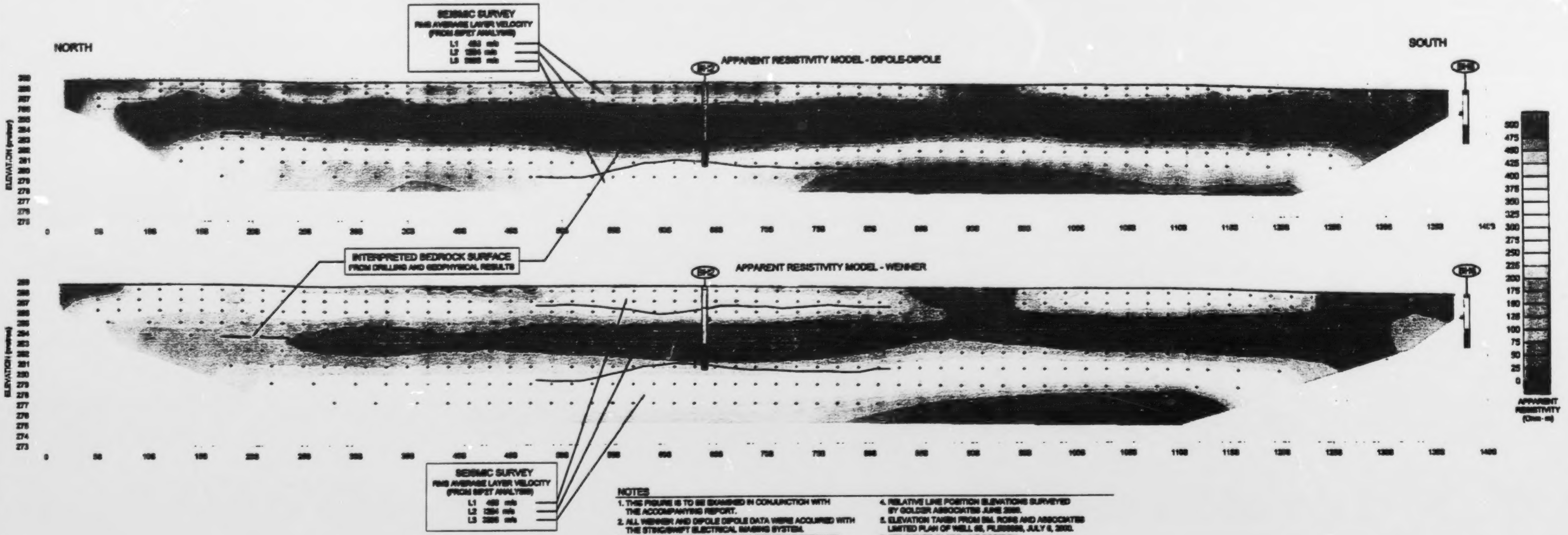
Golder Associates

Drawn JBC/KD
Chkd MMW

P3105C7-11x17.DWG

ERI AND SEISMIC SURVEY RESULTS
WELL #5 - LINE 6
WALKERTON, ONTARIO

FIGURE C-8



NOTES

1. THIS FIGURE IS TO BE EXAMINED IN CONJUNCTION WITH THE ACCOMPANYING REPORT.
2. ALL WENNER AND DIPOLE DIPOLE DATA WERE ACQUIRED WITH THE STING/SWIFT ELECTRICAL IMAGING SYSTEM.
3. DATA WERE MODELLED USING THE "RES2DINV" SOFTWARE PACKAGE BY DR. M.H. LOKE (2D. INVERSION)
4. RELATIVE LINE POSITION ELEVATIONS SURVEYED BY GOLDER ASSOCIATES JUNE 2000.
5. ELEVATION TAKEN FROM B.M. ROSS AND ASSOCIATES LIMITED PLAN OF WELL #5, FILE, JULY 6, 2000.
6. SEE FIGURE C1 FOR LINE POSITION.
7. INTERPRETED BEDROCK SURFACE IS BASED ON ERI SURVEY RESULTS AND BOREHOLE RECORDS.

NOTE:
THIS FIGURE IS DRAWN AT 1:250 SCALE AND PLOTTED AT 1:400 FOR REPORTING PURPOSES.

Date SEPT. 2000
Project 001-3105(5000)

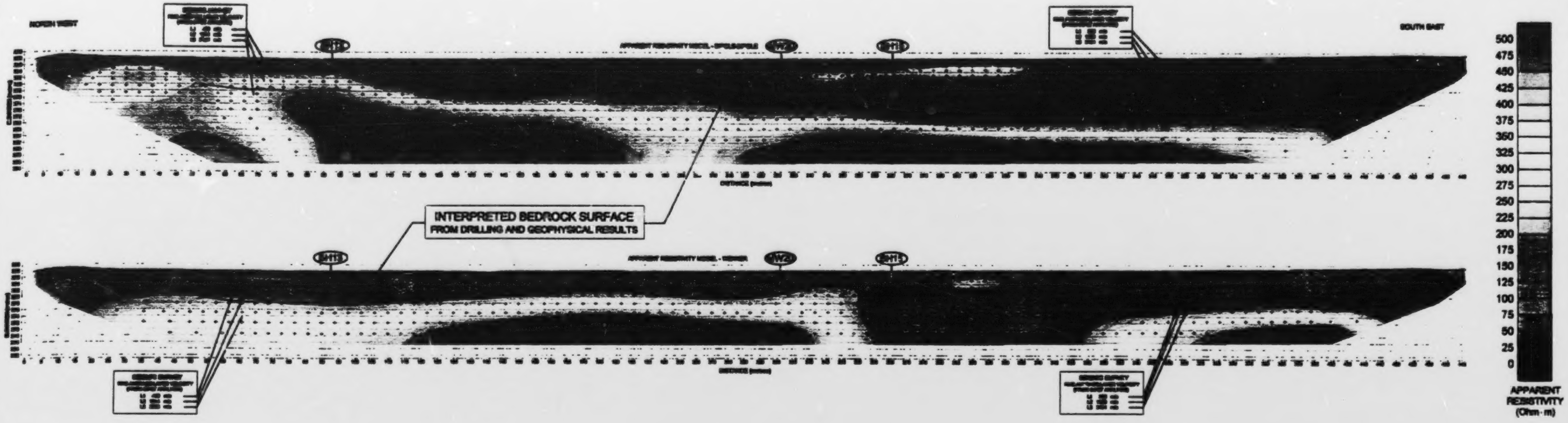
Golder Associates

Drawn JBG/KD
Chkd MMW

001-3105/5000/R_SEPT00/11x17/P3105C8-11x17.DWG

ERI AND SEISMIC SURVEY RESULTS
WELLS #6 & #7 - LINE 1
WALKERTON, ONTARIO

FIGURE C-9



NOTES

1. THIS FIGURE IS TO BE EXAMINED IN CONJUNCTION WITH THE ACCOMPANYING REPORT.
2. ALL WENNER AND DIPOLE DIPOLE DATA WERE ACQUIRED WITH THE STING/SWIFT ELECTRICAL IMAGING SYSTEM.
3. DATA WERE MODELLED USING THE "RES2DINV" SOFTWARE PACKAGE BY DR. M.H. LOKE (2D. INVERSION)
4. RELATIVE LINE POSITION ELEVATIONS SURVEYED BY GOLDER ASSOCIATES JUNE 2000.
5. ELEVATION TAKEN FROM B.M. ROSS AND ASSOCIATES LIMITED PLAN OF WELLS #6 AND #7, FILE00086, JULY 6, 2000.
6. SEE FIGURE C2 FOR LINE POSITION.
7. INTERPRETED BEDROCK SURFACE IS BASED ON ERI SURVEY RESULTS AND BOREHOLE RECORDS.

NOTE:

THIS FIGURE IS DRAWN AT 1:500 SCALE AND PLOTTED AT 1:1250 FOR REPORTING PURPOSES.

Date SEPT. 2000

Project 001-3105(5000)

Golder Associates

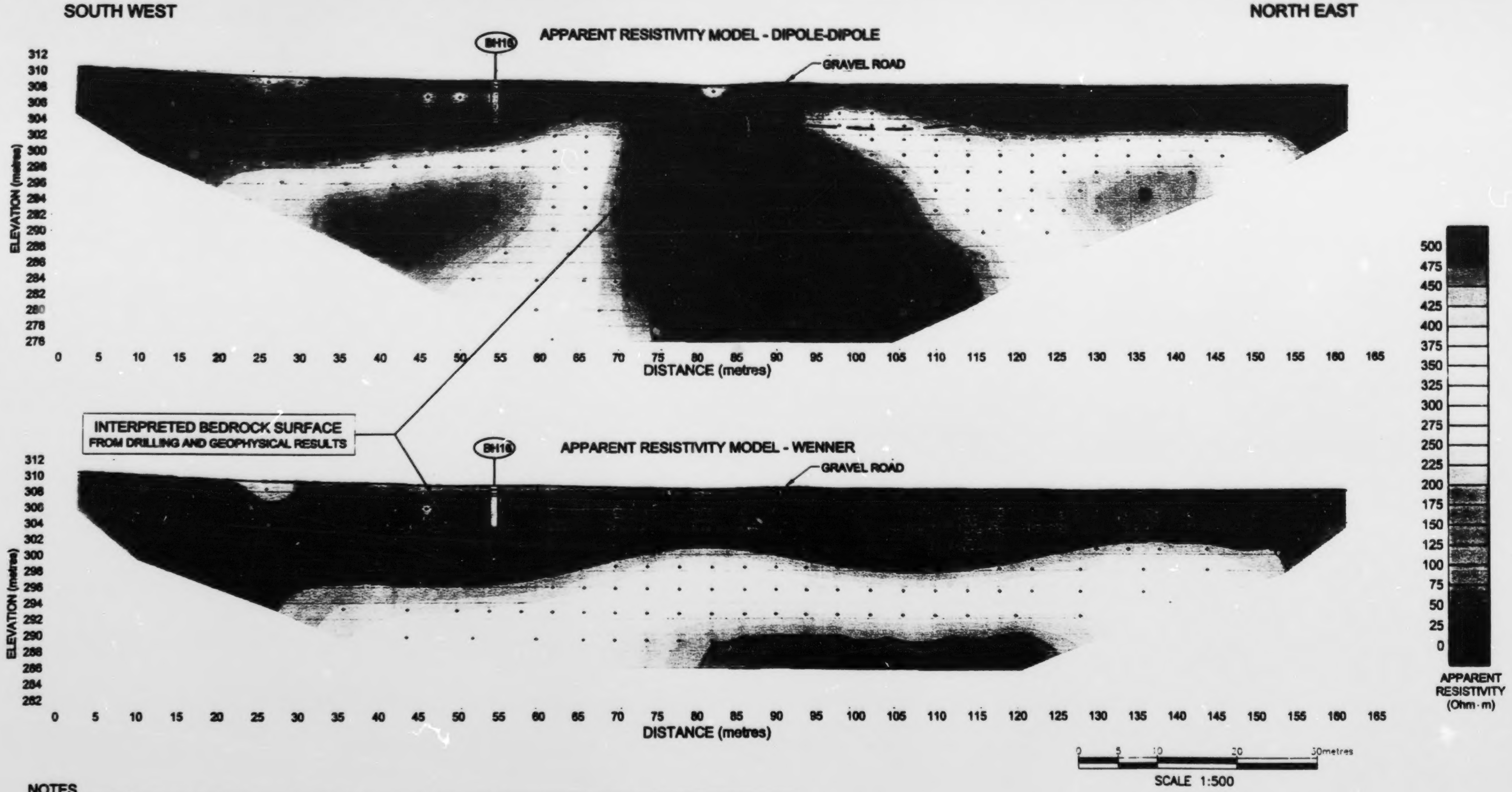
Drawn JBG/KD

Chkd MMW

001-3105/5000/R_SEPT00/11x17/P3105C9-11x17.DWG

ERI SURVEY RESULTS
WELLS #6 & #7 - LINE 2
WALKERTON, ONTARIO

FIGURE C-10



NOTES

1. THIS FIGURE IS TO BE EXAMINED IN CONJUNCTION WITH THE ACCOMPANYING REPORT.
2. ALL WENNER AND DIPOLE DIPOLE DATA WERE ACQUIRED WITH THE STING/SWIFT ELECTRICAL IMAGING SYSTEM.
3. DATA WERE MODELLED USING THE "RES2DINV" SOFTWARE PACKAGE BY DR. M.H. LOKE (2D. INVERSION)
4. RELATIVE LINE POSITION ELEVATIONS SURVEYED BY GOLDER ASSOCIATES JUNE 2000.
5. ELEVATION TAKEN FROM BM. ROSS AND ASSOCIATES LIMITED PLAN OF WELLS #6 AND #7, FILE00086, JULY 6, 2000.
6. SEE FIGURE C2 FOR LINE POSITION.
7. INTERPRETED BEDROCK SURFACE IS BASED ON ERI SURVEY RESULTS AND BOREHOLE RECORDS.

Date SEPT 2000

Project 001-3105(5000)

Golder Associates

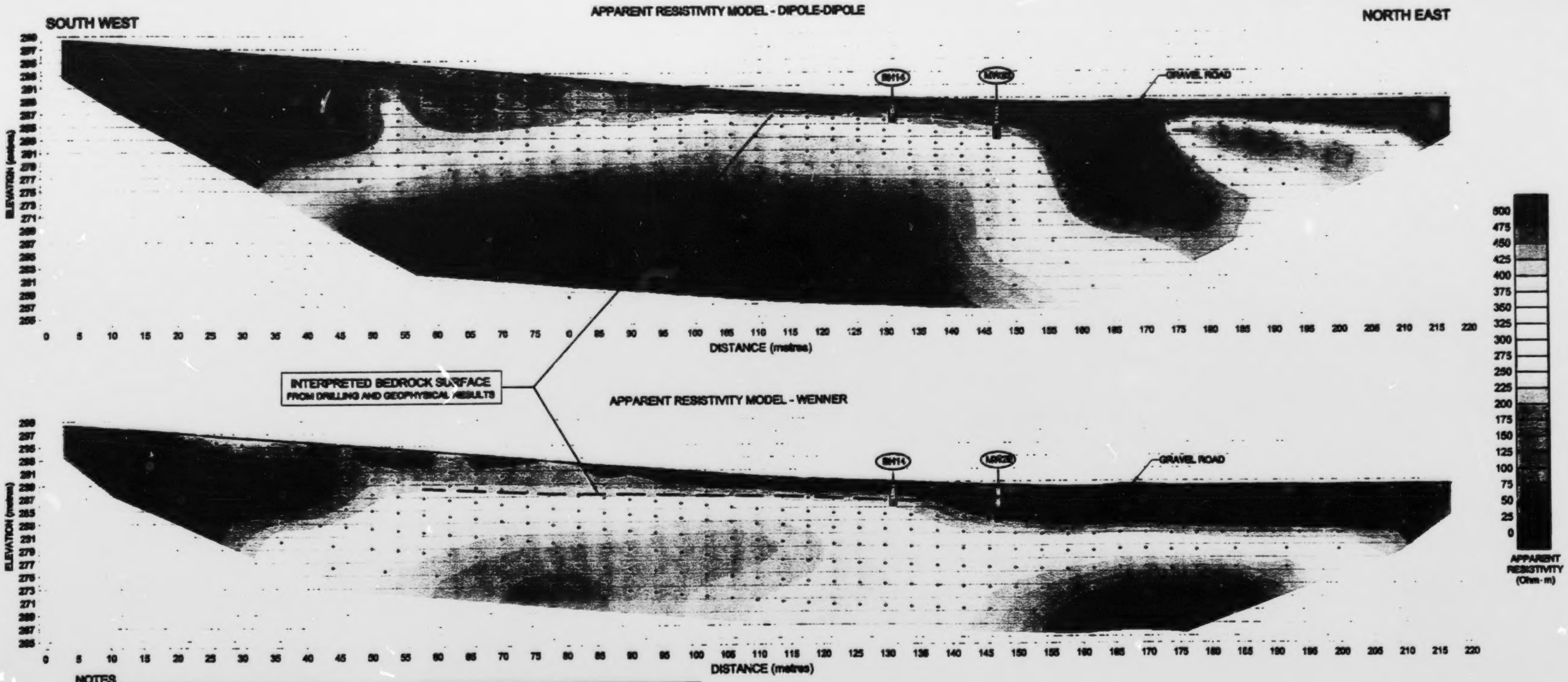
Drawn JBG/KD

Chkd MMW

001-3105/5000/R_SEPT00/P3105C-10_2.DWG

ERI SURVEY RESULTS
WELLS #6 & #7 - LINE 3
WALKERTON, ONTARIO

FIGURE C-11



NOTES

1. THIS FIGURE IS TO BE EXAMINED IN CONJUNCTION WITH THE ACCOMPANYING REPORT.
2. ALL WENNER AND DIPOLE DIPOLE DATA WERE ACQUIRED WITH THE STING/SWIFT ELECTRICAL IMAGING SYSTEM.
3. DATA WERE MODELLED USING THE "RES2DINV" SOFTWARE PACKAGE BY DR. M.H. LOKE (2D. INVERSION)
4. RELATIVE LINE POSITION ELEVATIONS SURVEYED BY GOLDER ASSOCIATES JUNE 2000.
5. ELEVATION TAKEN FROM BM. ROSS AND ASSOCIATES LIMITED PLAN OF WELLS #6 AND #7, FILE00089, JULY 6, 2000.
6. SEE FIGURE C2 FOR LINE POSITION.
7. INTERPRETED BEDROCK SURFACE IS BASED ON ERI SURVEY RESULTS AND BOREHOLE RECORDS.

NOTE:
THIS FIGURE IS DRAWN AT 1:500 SCALE AND PLOTTED AT 1:650 FOR REPORTING PURPOSES.

Date SEPT 2000
Project 001-3105(5000)

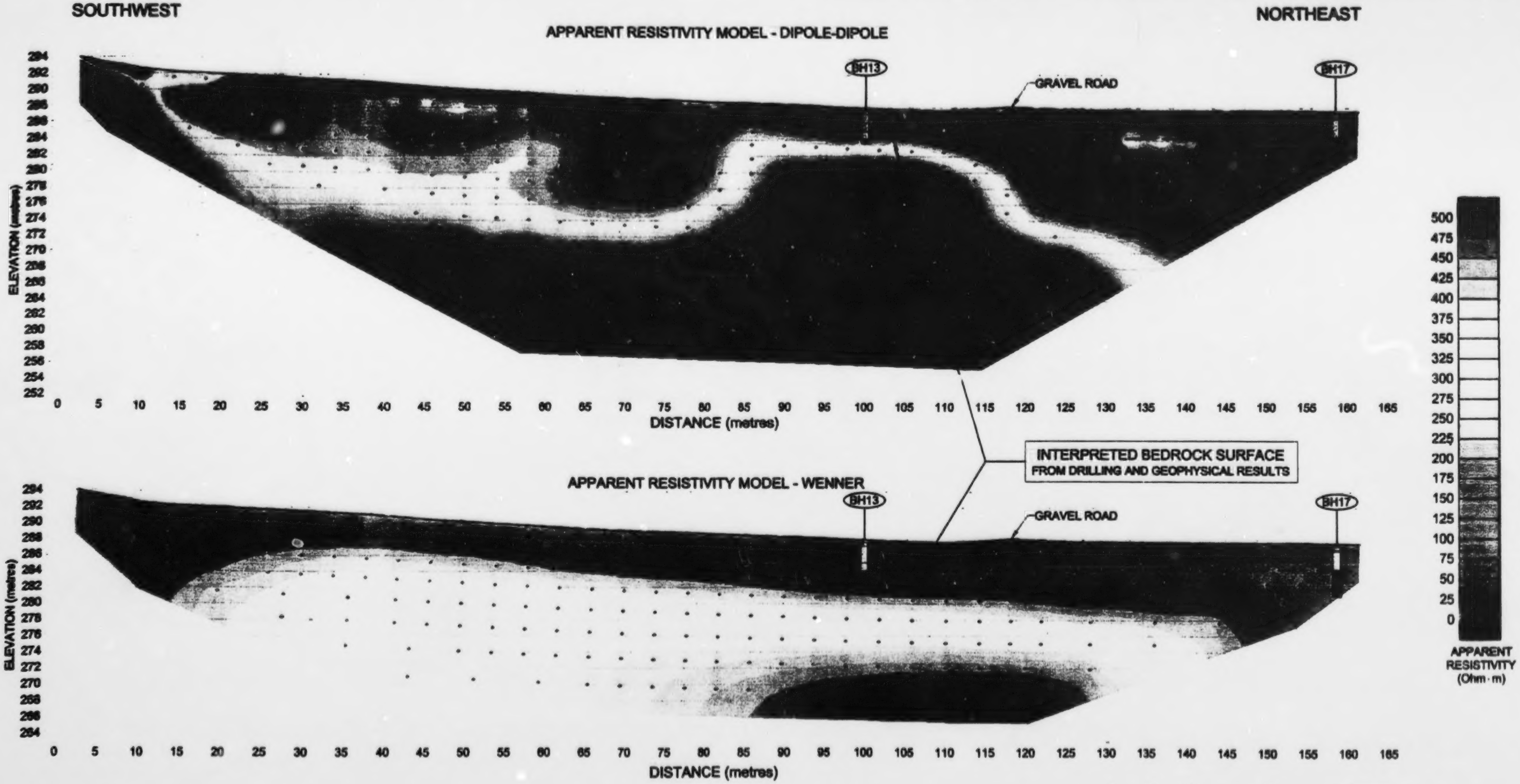
Golder Associates

Drawn JBG/KD
Chkd MMW

001-3105/5000/R_SEPT00/P3105C-11_2.DWG

ERI SURVEY RESULTS
WELLS #6 & #7 - LINE 4
WALKERTON, ONTARIO

FIGURE C-12



0 5 10 20 30metres

SCALE 1:500

NOTES

1. THIS FIGURE IS TO BE EXAMINED IN CONJUNCTION WITH THE ACCOMPANYING REPORT.
2. ALL WENNER AND DIPOLE DIPOLE DATA WERE ACQUIRED WITH THE STING/SWIFT ELECTRICAL IMAGING SYSTEM.
3. DATA WERE MODELLED USING THE "RES2DINV" SOFTWARE PACKAGE BY DR. M.H. LOKE (ZD. INVERSION)
4. RELATIVE LINE POSITION ELEVATIONS SURVEYED BY GOLDER ASSOCIATES JUNE 2000.
5. ELEVATION TAKEN FROM BM. ROSS AND ASSOCIATES LIMITED PLAN OF WELLS #6 AND #7, FILE00066, JULY 6, 2000.
6. SEE FIGURE C2 FOR LINE POSITION.
7. INTERPRETED BEDROCK SURFACE IS BASED ON ERI SURVEY RESULTS AND BOREHOLE RECORDS.

Date SEPT 2000

Project 001 3105(5000)

Golder Associates

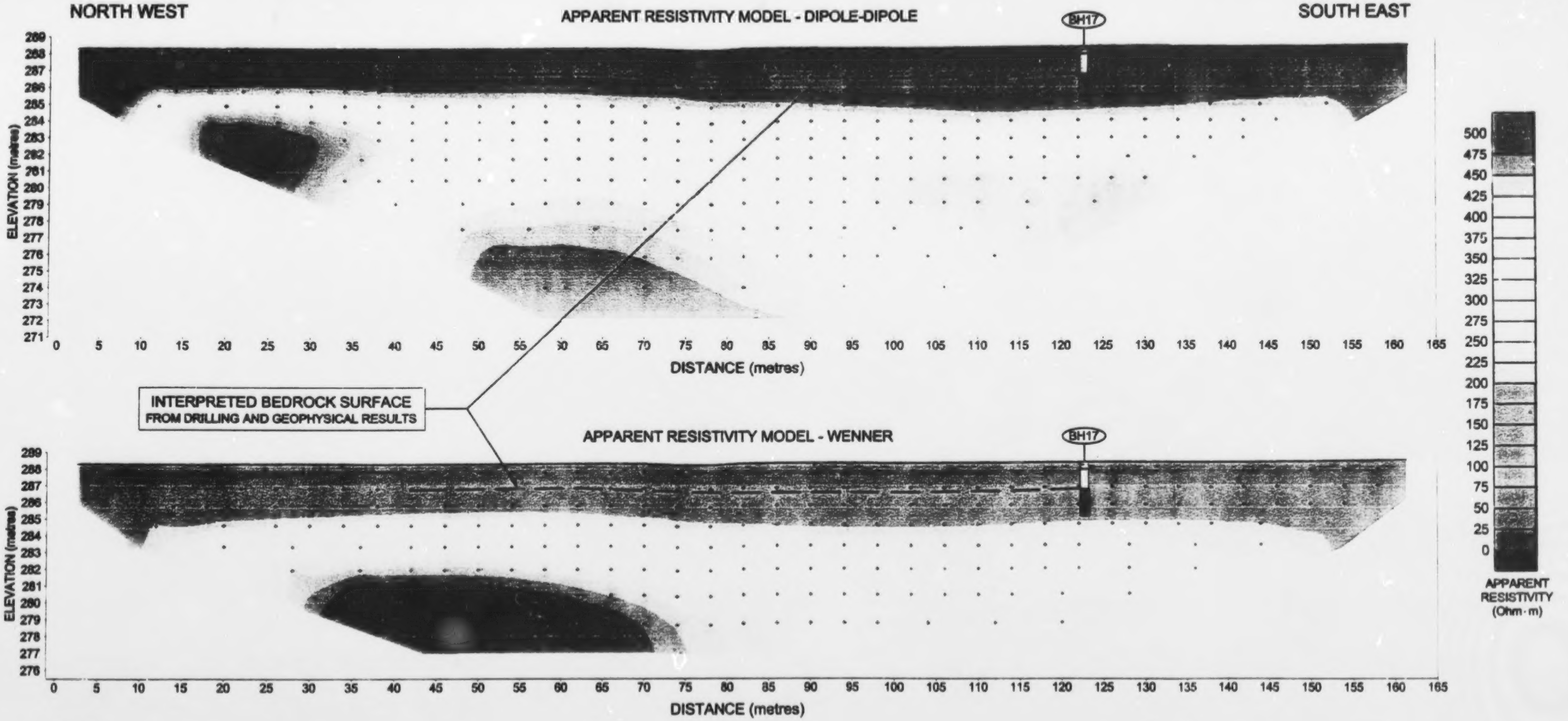
Drawn JBC, PD

Chk'd MMW

001-3105/5000/R_SEPT00/P3105C-12_2.DWG

ERI SURVEY RESULTS
WELLS #6 & #7 - LINE 5
WALKERTON, ONTARIO

FIGURE C-13



NORTH WEST

APPARENT RESISTIVITY MODEL - DIPOLE-DIPOLE

SOUTH EAST

INTERPRETED BEDROCK SURFACE
FROM DRILLING AND GEOPHYSICAL RESULTS

APPARENT RESISTIVITY MODEL - WENNER

NOTES

1. THIS FIGURE IS TO BE EXAMINED IN CONJUNCTION WITH THE ACCOMPANYING REPORT.
2. ALL WENNER AND DIPOLE DIPOLE DATA WERE ACQUIRED WITH THE STING/SWIFT ELECTRICAL IMAGING SYSTEM.
3. DATA WERE MODELLED USING THE "RES2DINV" SOFTWARE PACKAGE BY DR. M.H. LOKE (ZD. INVERSION)
4. RELATIVE LINE POSITION ELEVATIONS SURVEYED BY GOLDER ASSOCIATES JUNE 2000.
5. ELEVATION TAKEN FROM BM. ROSS AND ASSOCIATES LIMITED PLAN OF WELLS #6 AND #7, FILE00086, JULY 6, 2000.
6. SEE FIGURE C2 FOR LINE POSITION.
7. INTERPRETED BEDROCK SURFACE IS BASED ON ERI SURVEY RESULTS AND BOREHOLE RECORDS.

0 5 10 20 30 metres
SCALE 1:500

Date SEPT 2000

Project 001-3105-5000

Golder Associates

Drawn [illegible]

Chk'd MMW

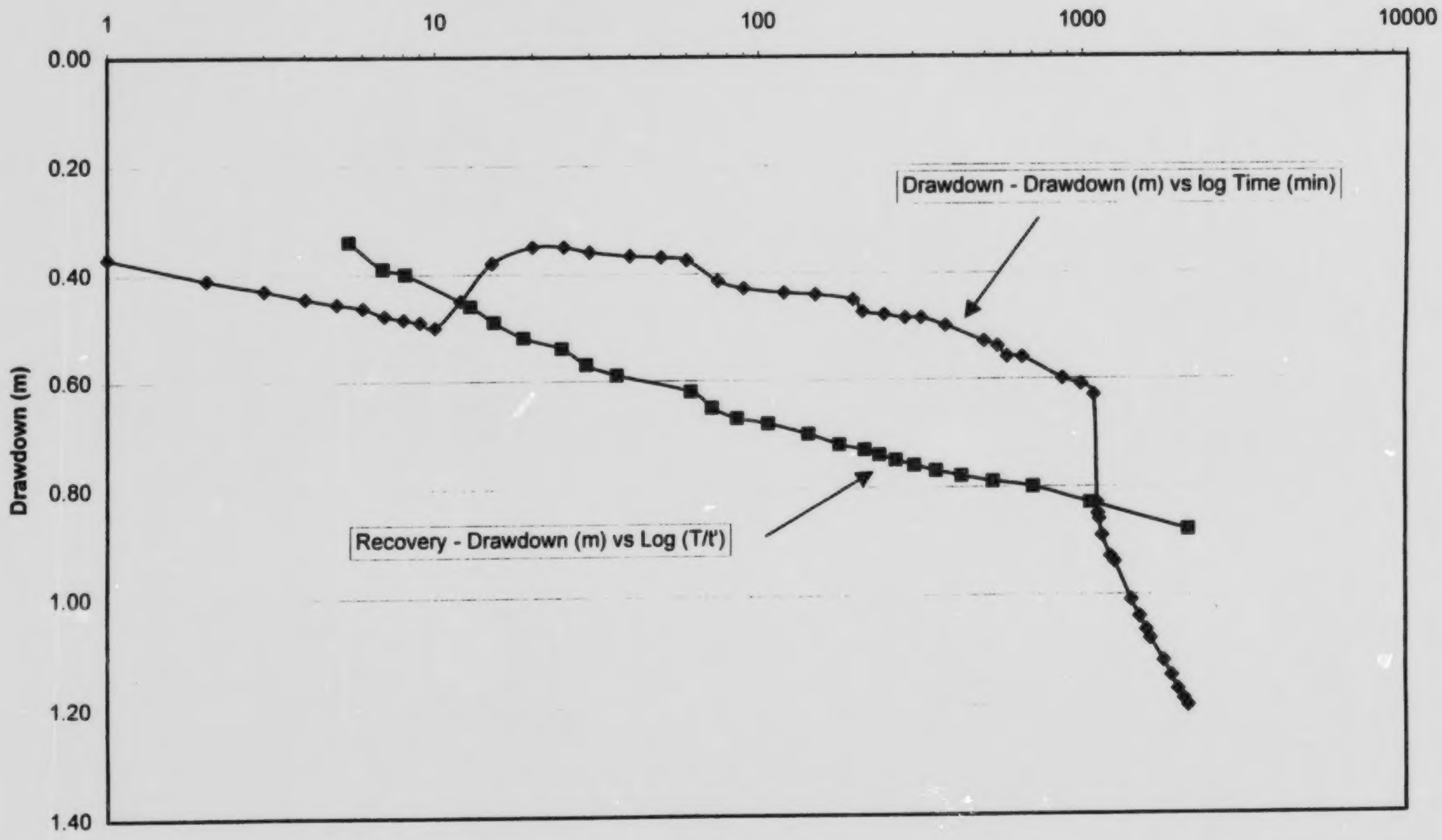
001-3105/5000/R SEPT00/P3105C-13_2.DWG

APPENDIX D

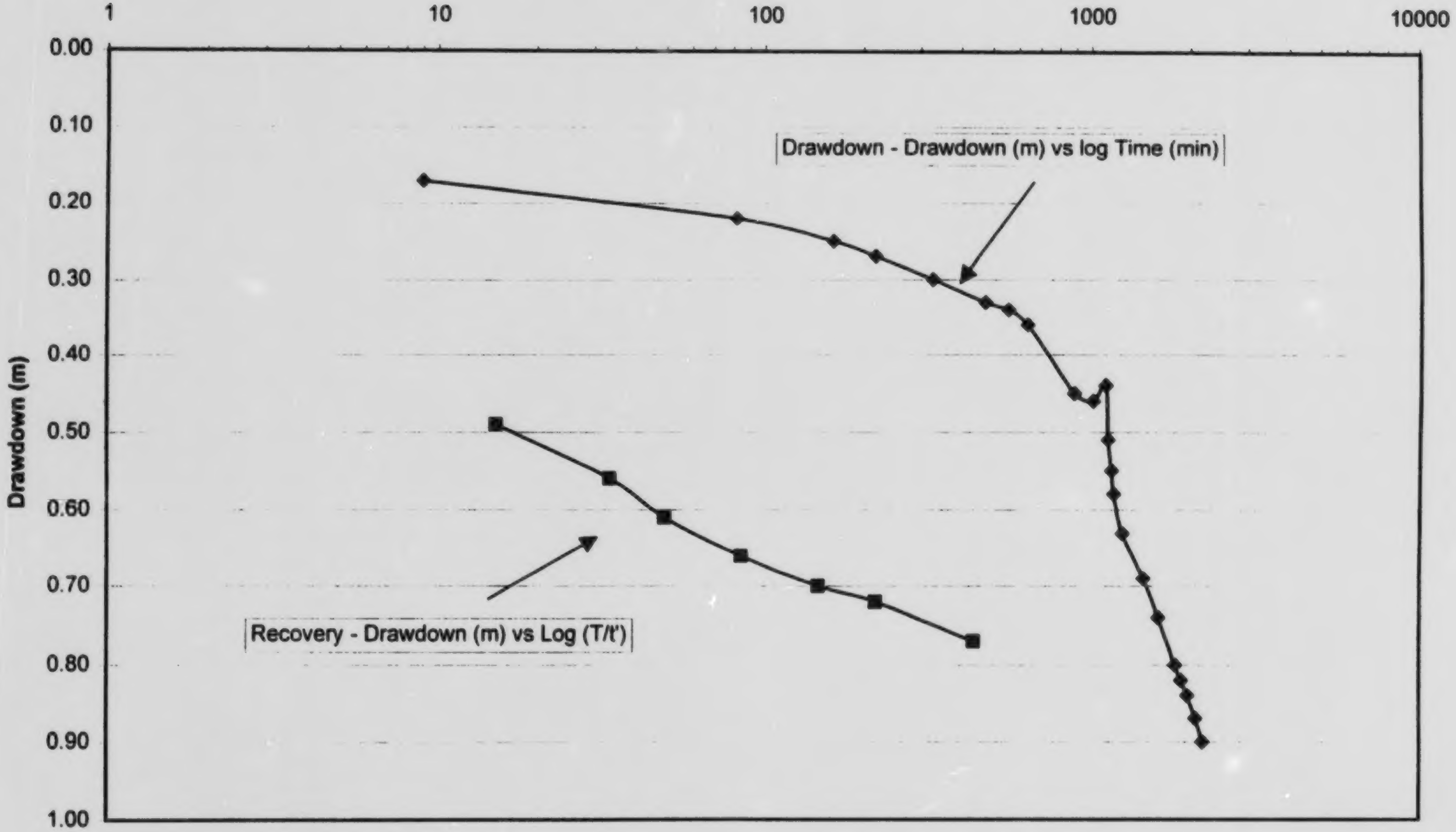
TIME DRAWDOWN PLOTS

5

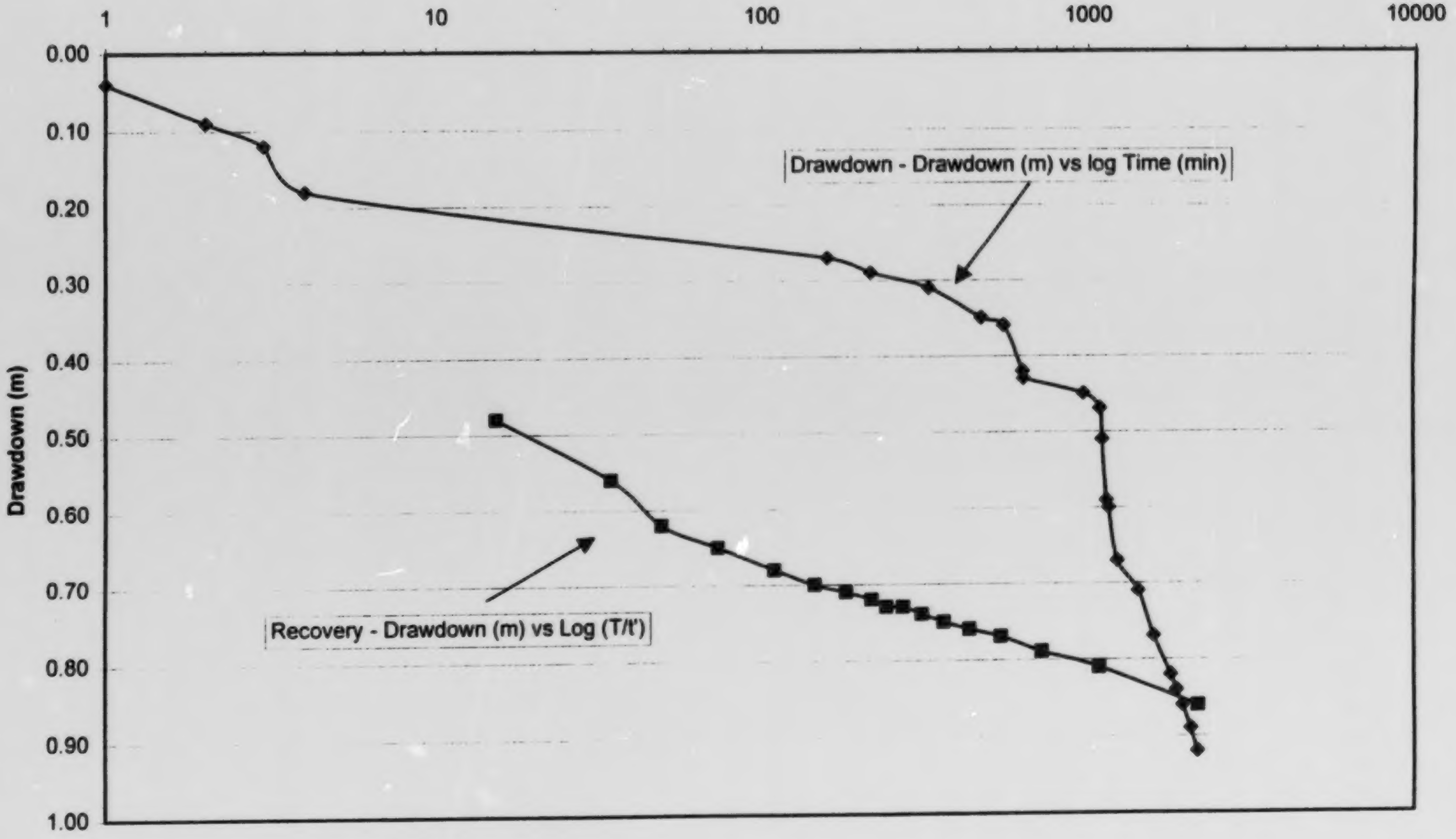
Drawdown Vs. Time Data for Well 5



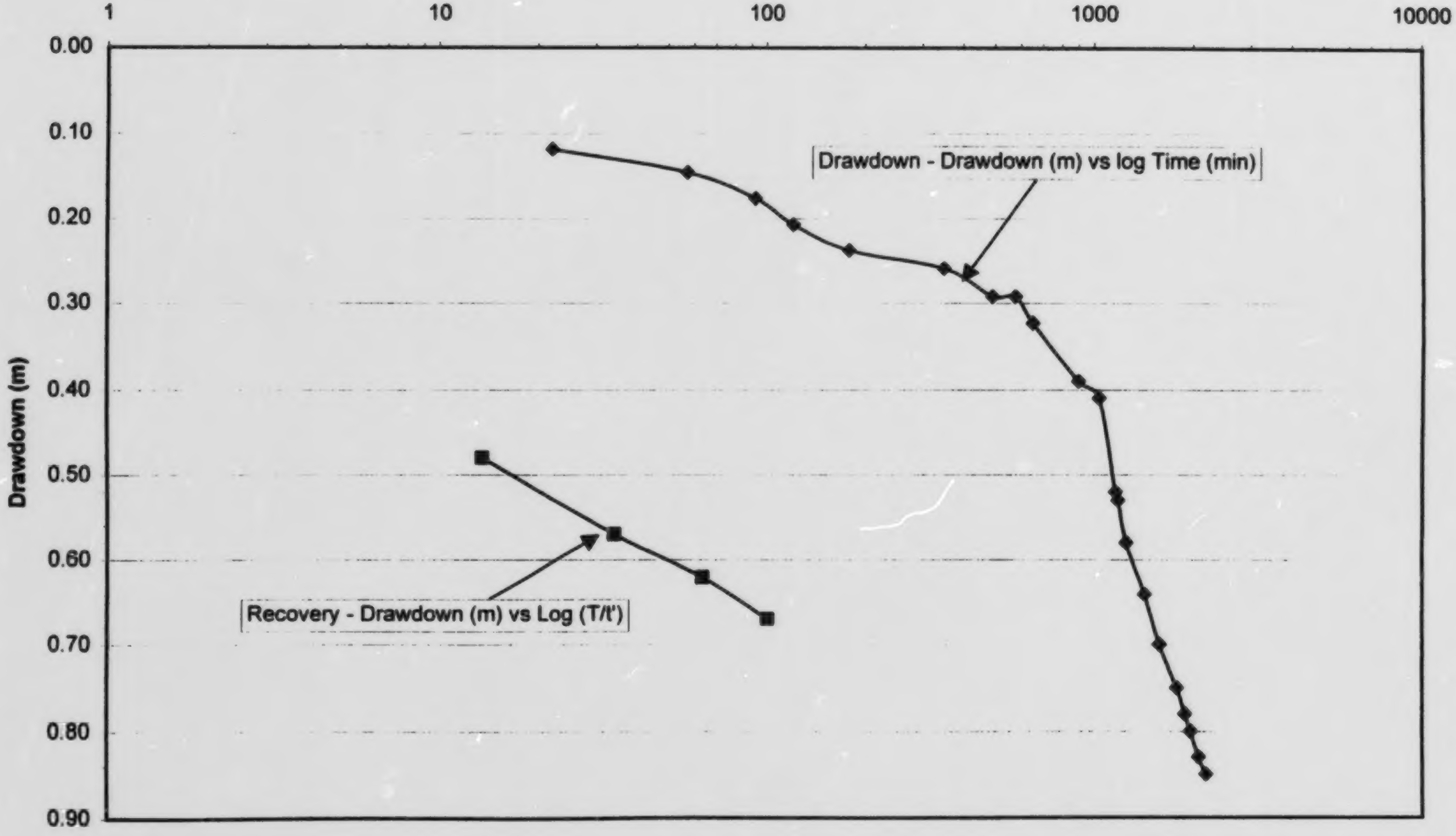
Drawdown Vs. Time Data for MW-00-1S



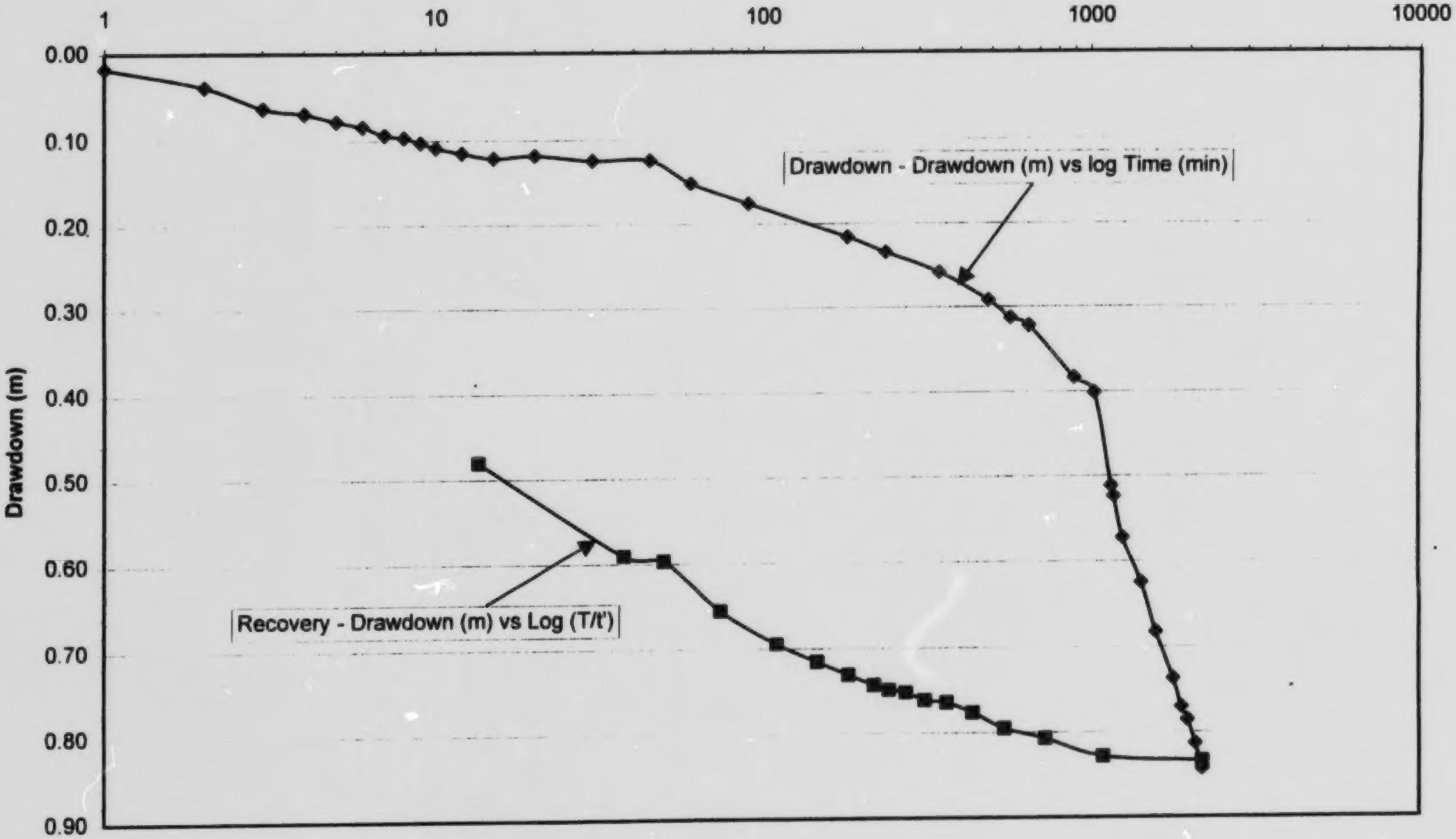
Drawdown Vs. Time Data for MW-00-1D



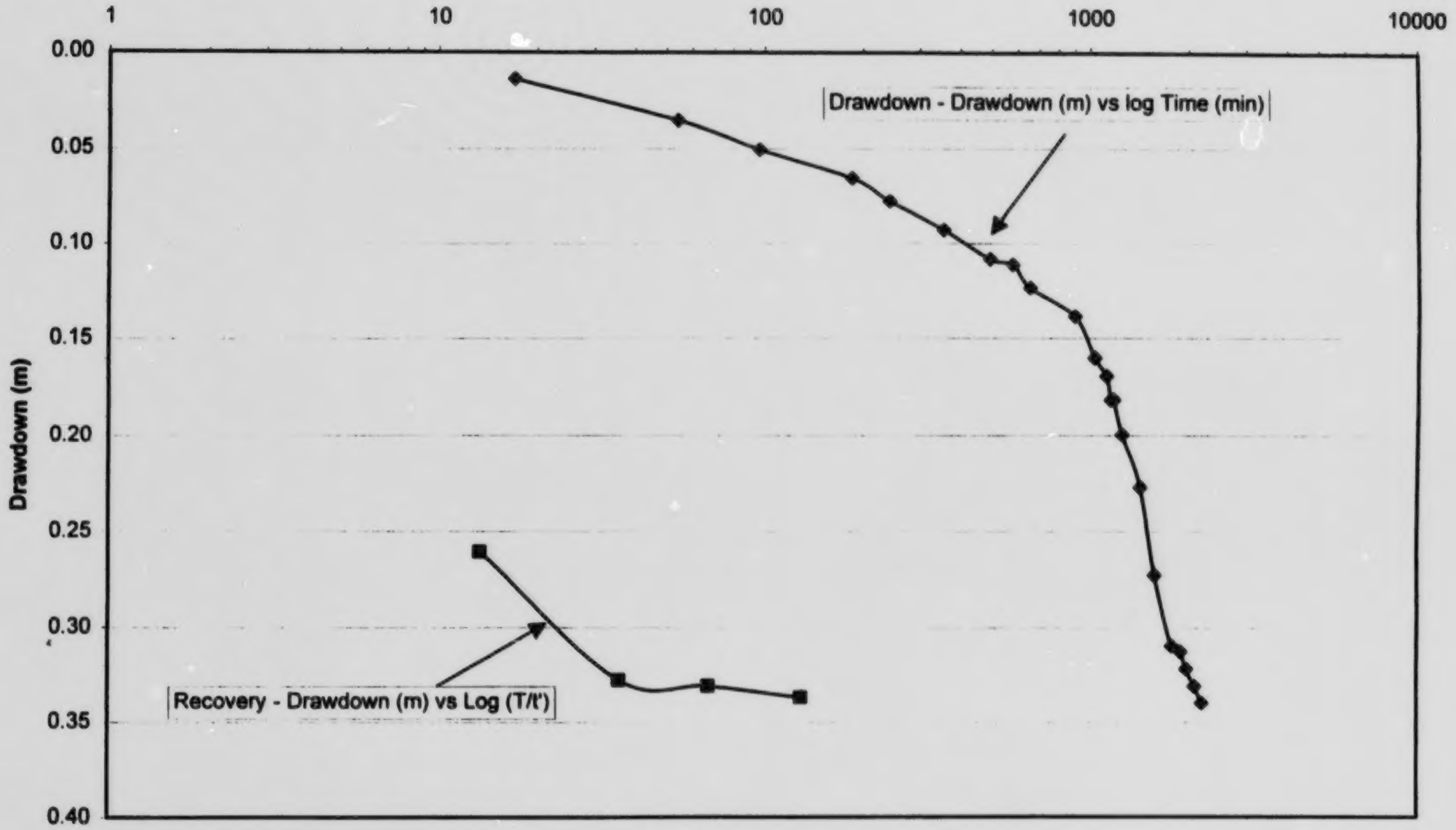
Drawdown Vs. Time Data for MW-00-2S



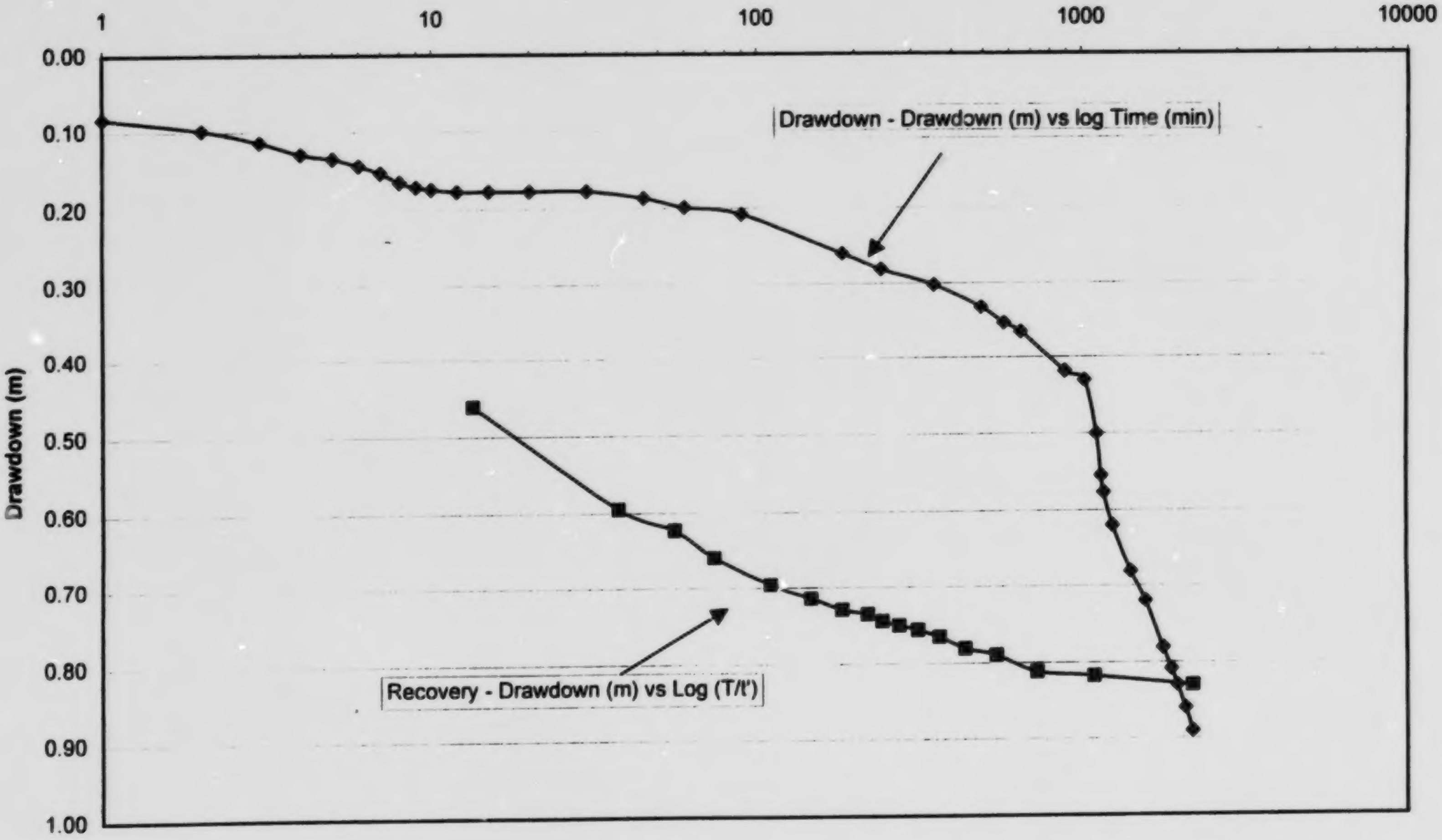
Drawdown Vs. Time Data for MW-00-2D



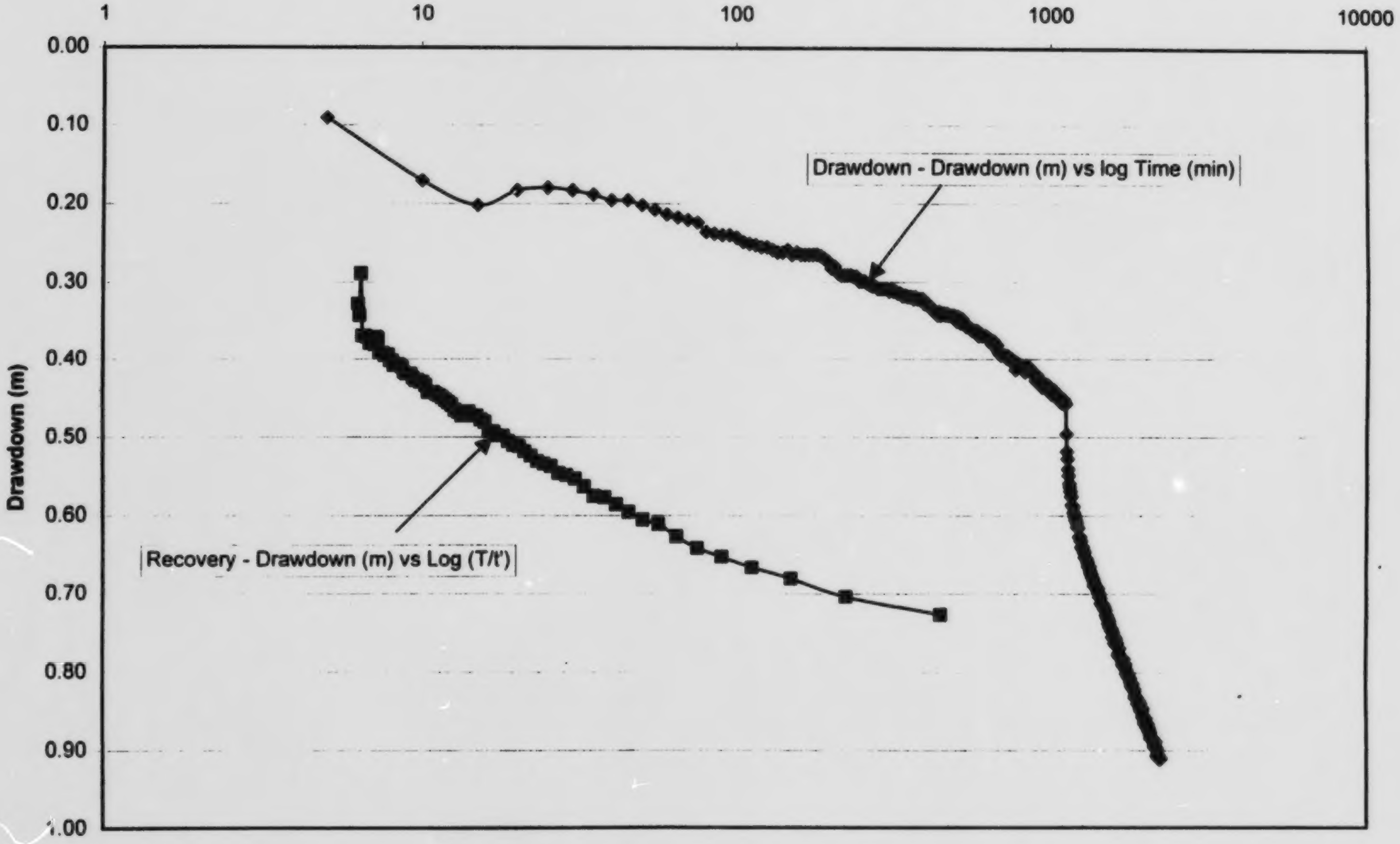
Drawdown Vs. Time Data for MW-00-3S



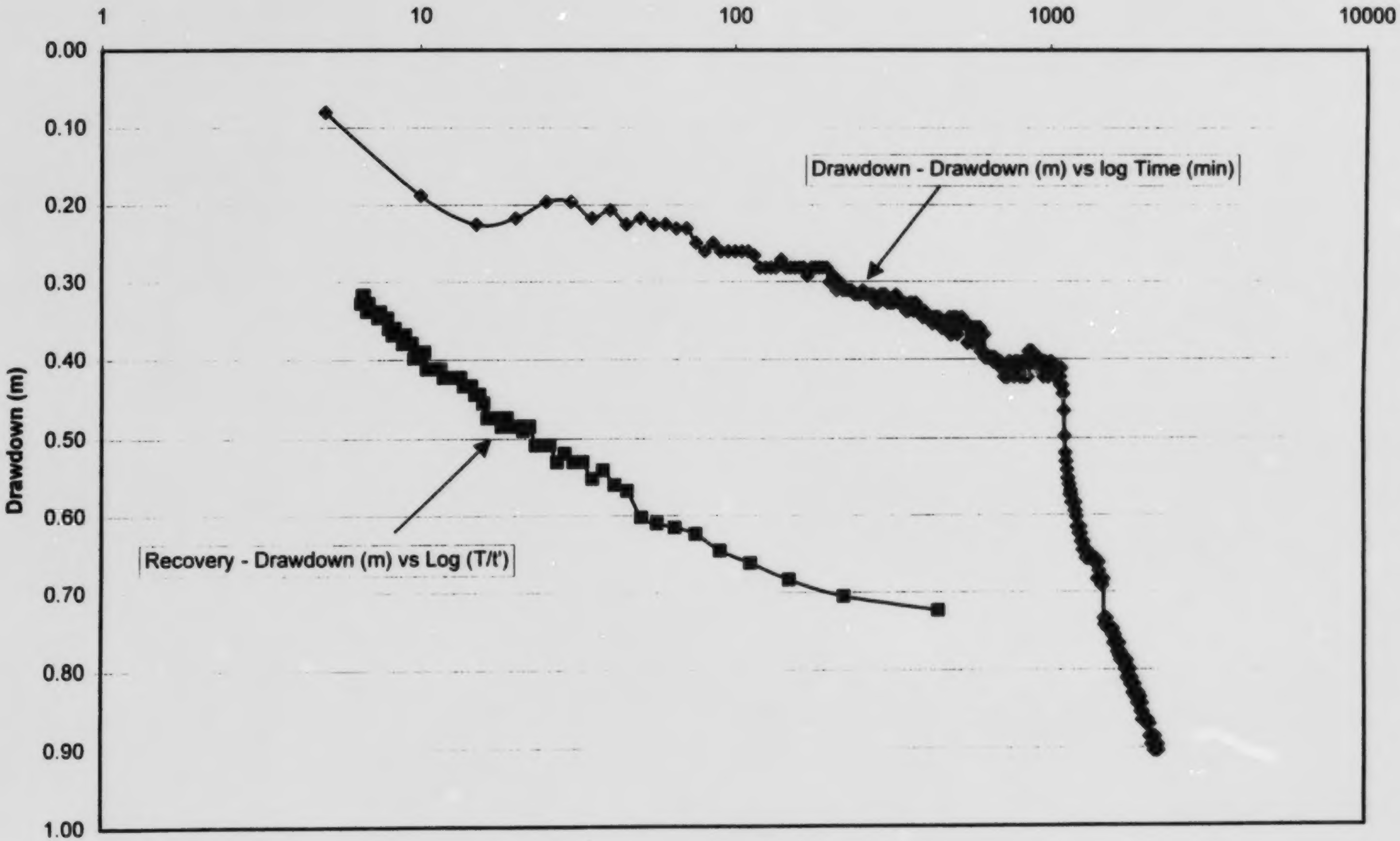
Drawdown Vs. Time Data for MW-00-3D



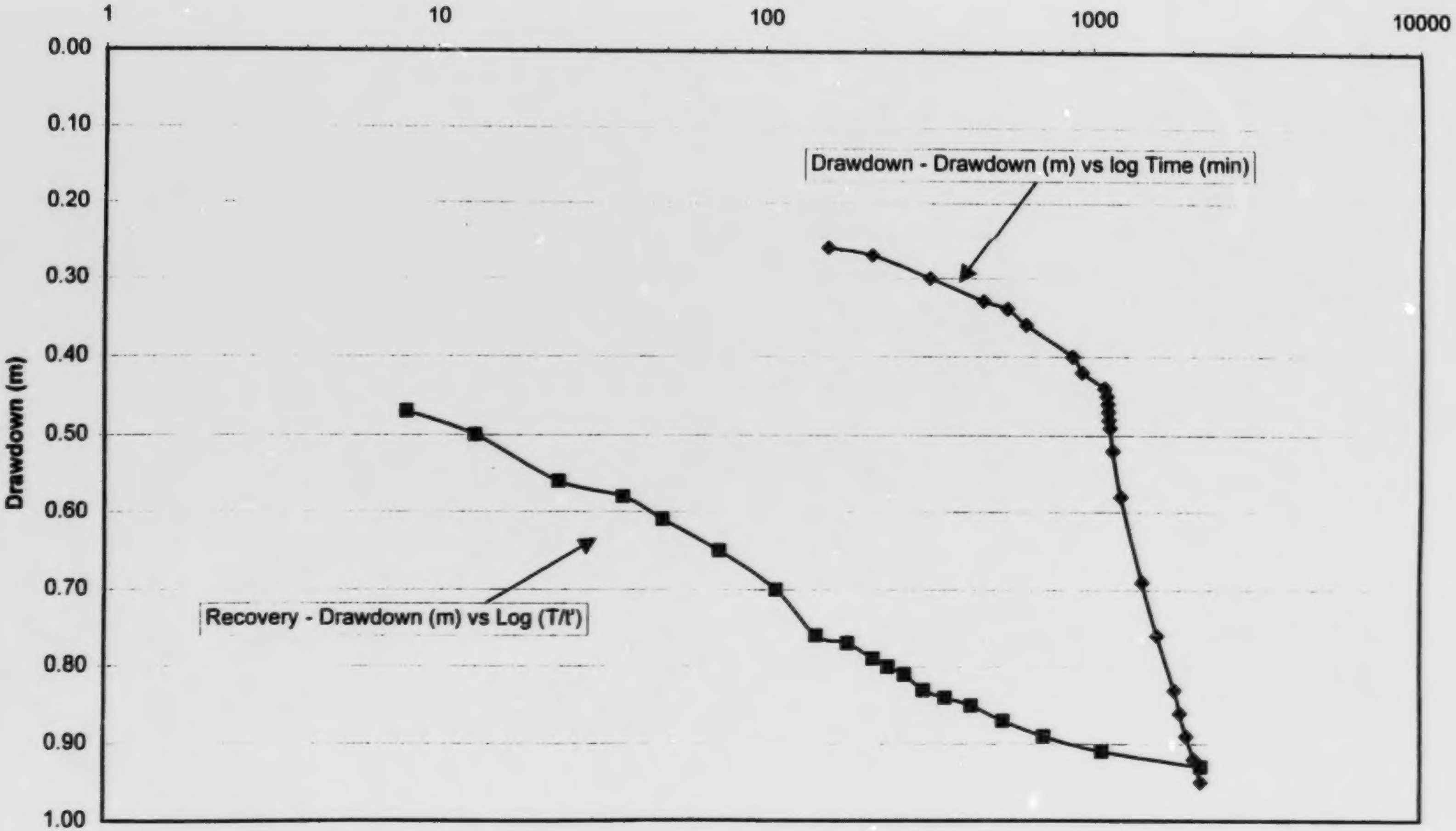
Drawdown Vs Time for MW-00-4S



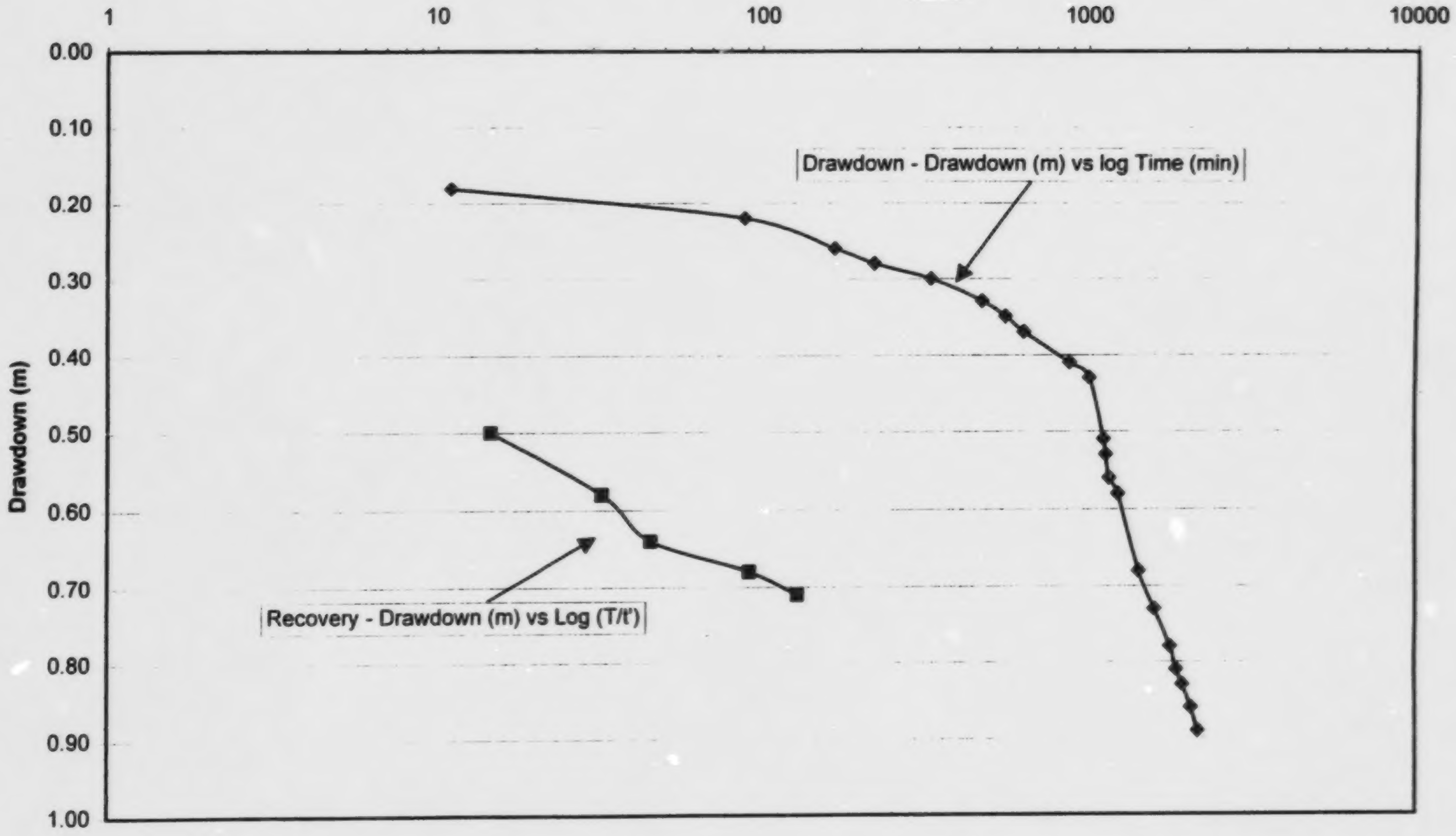
Drawdown Vs Time for MW-00-4D



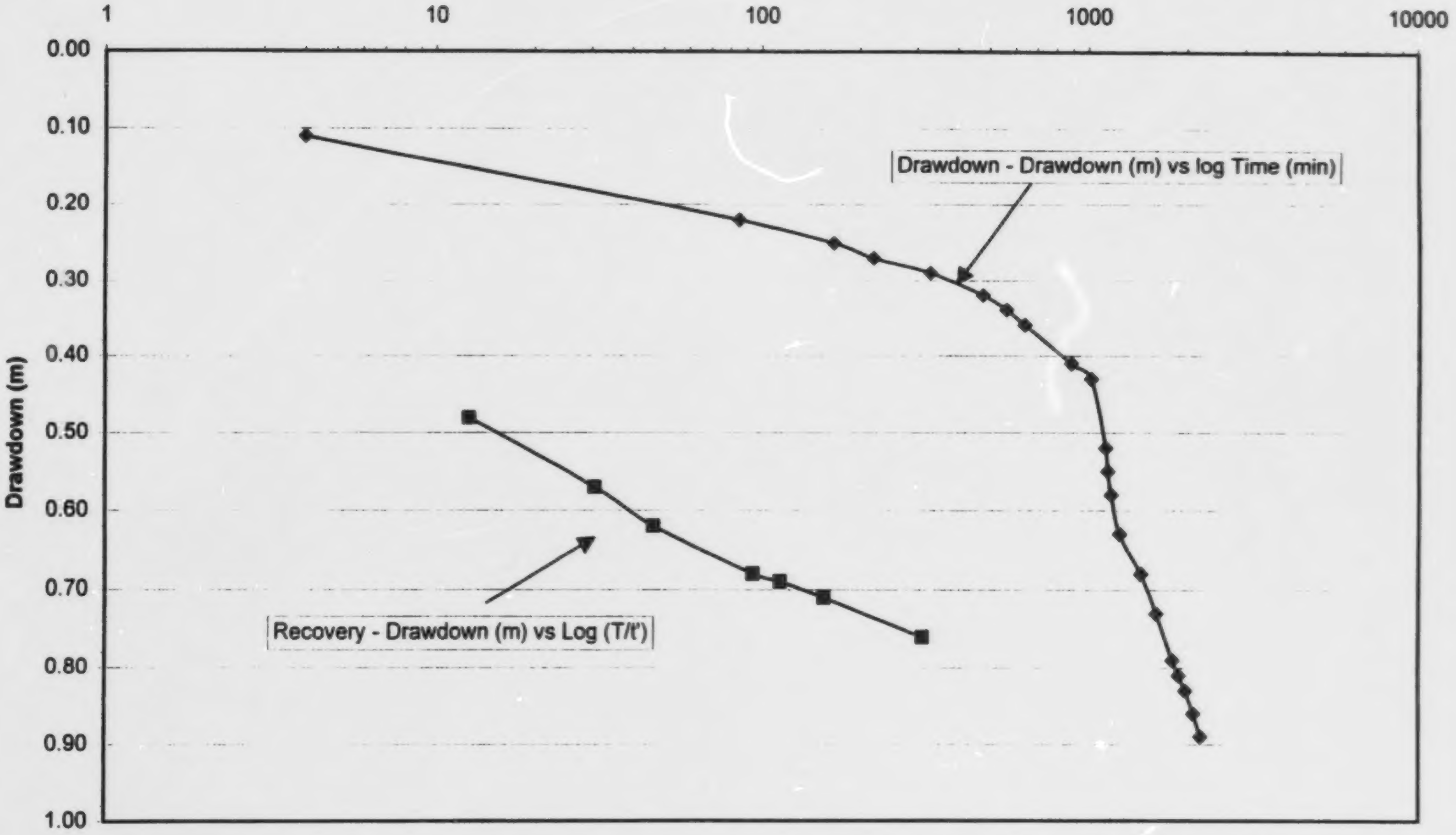
Drawdown Vs. Time Data for MW-00-5



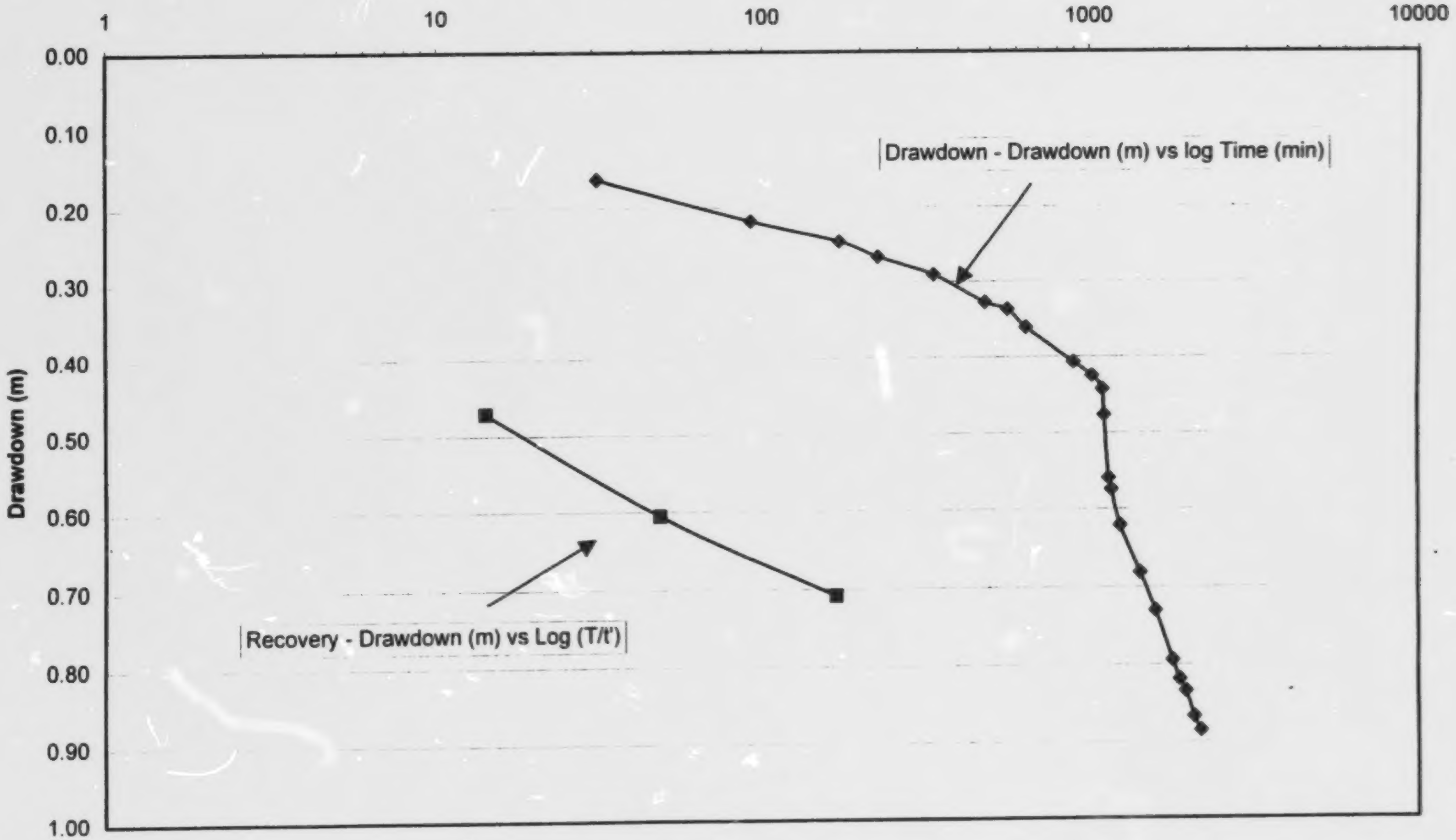
Drawdown Vs. Time Data for MW-00-6S



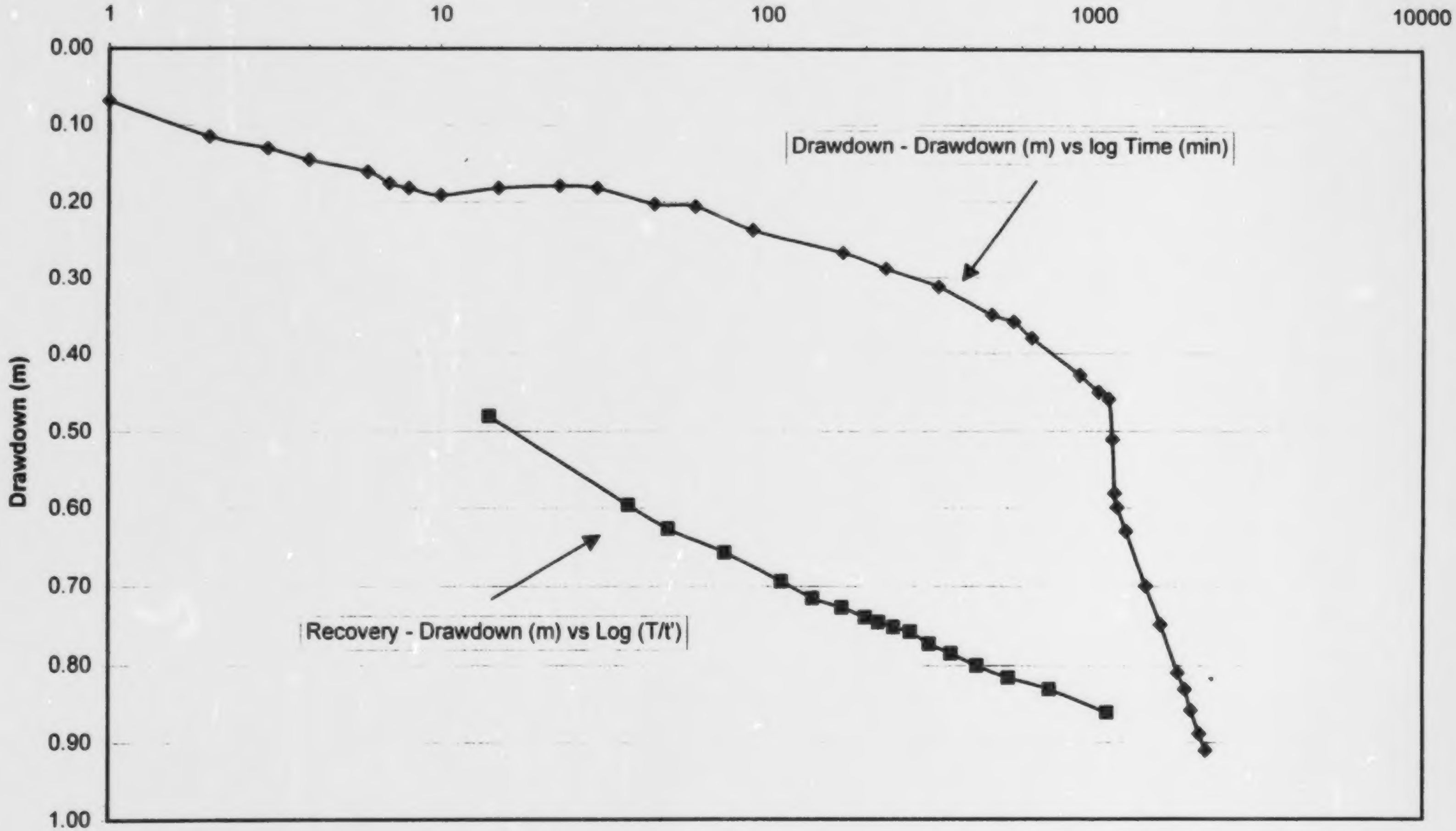
Drawdown Vs. Time Data for MW-00-6D



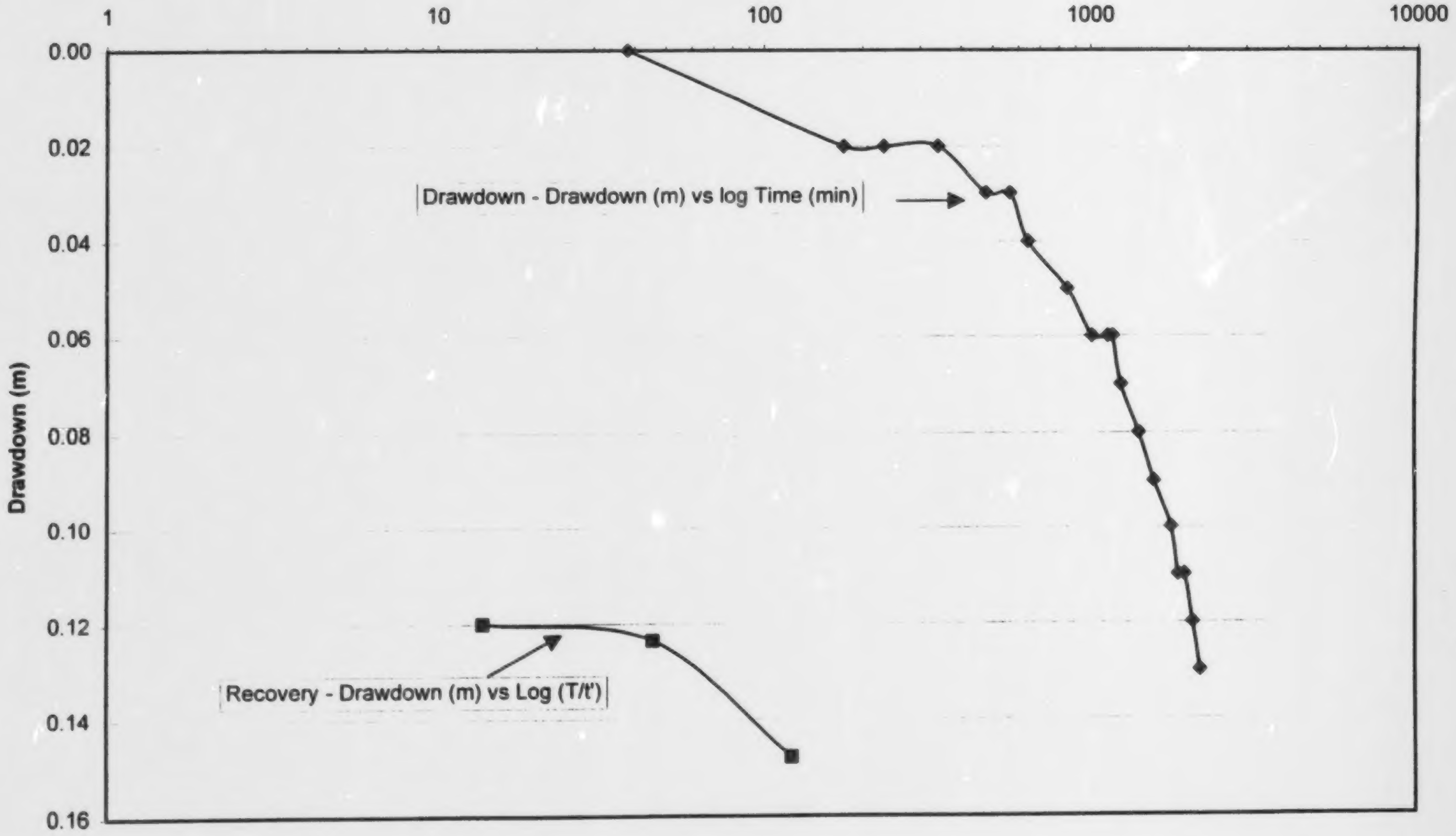
Drawdown Vs. Time Data for MW-00-7S



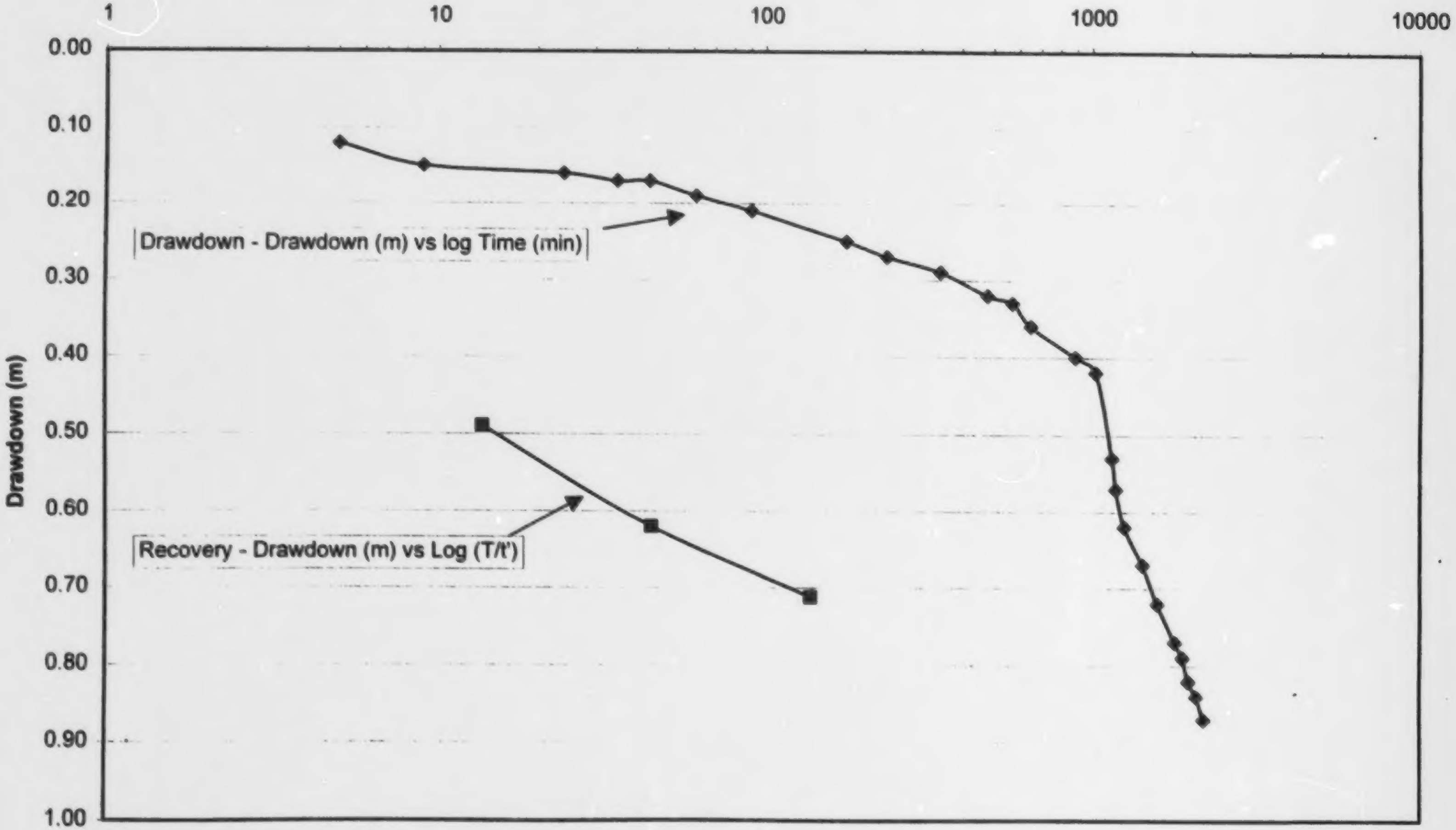
Drawdown Vs. Time Data for MW-00-7D



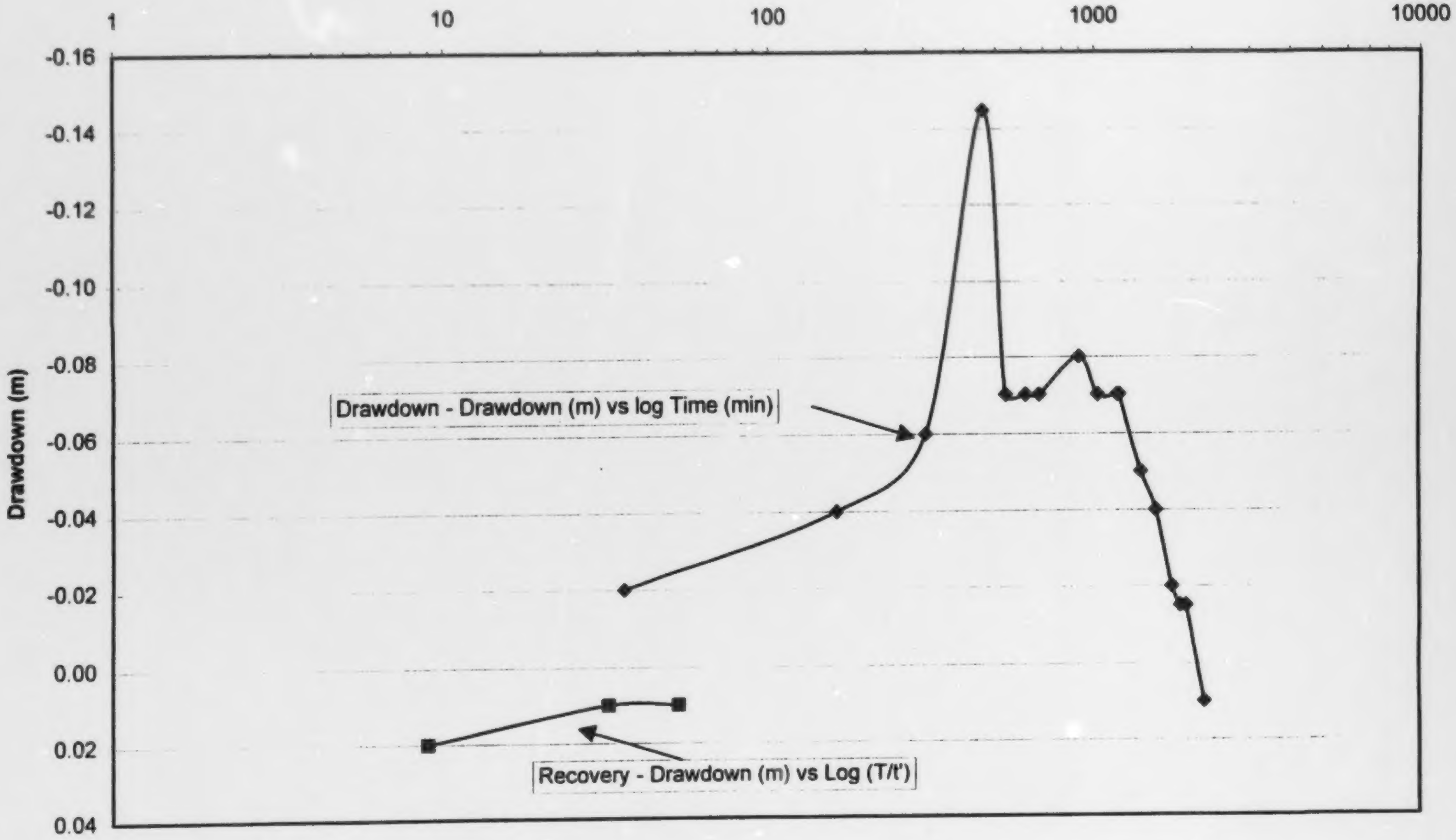
Drawdown Vs. Time Data for MW-00-8S



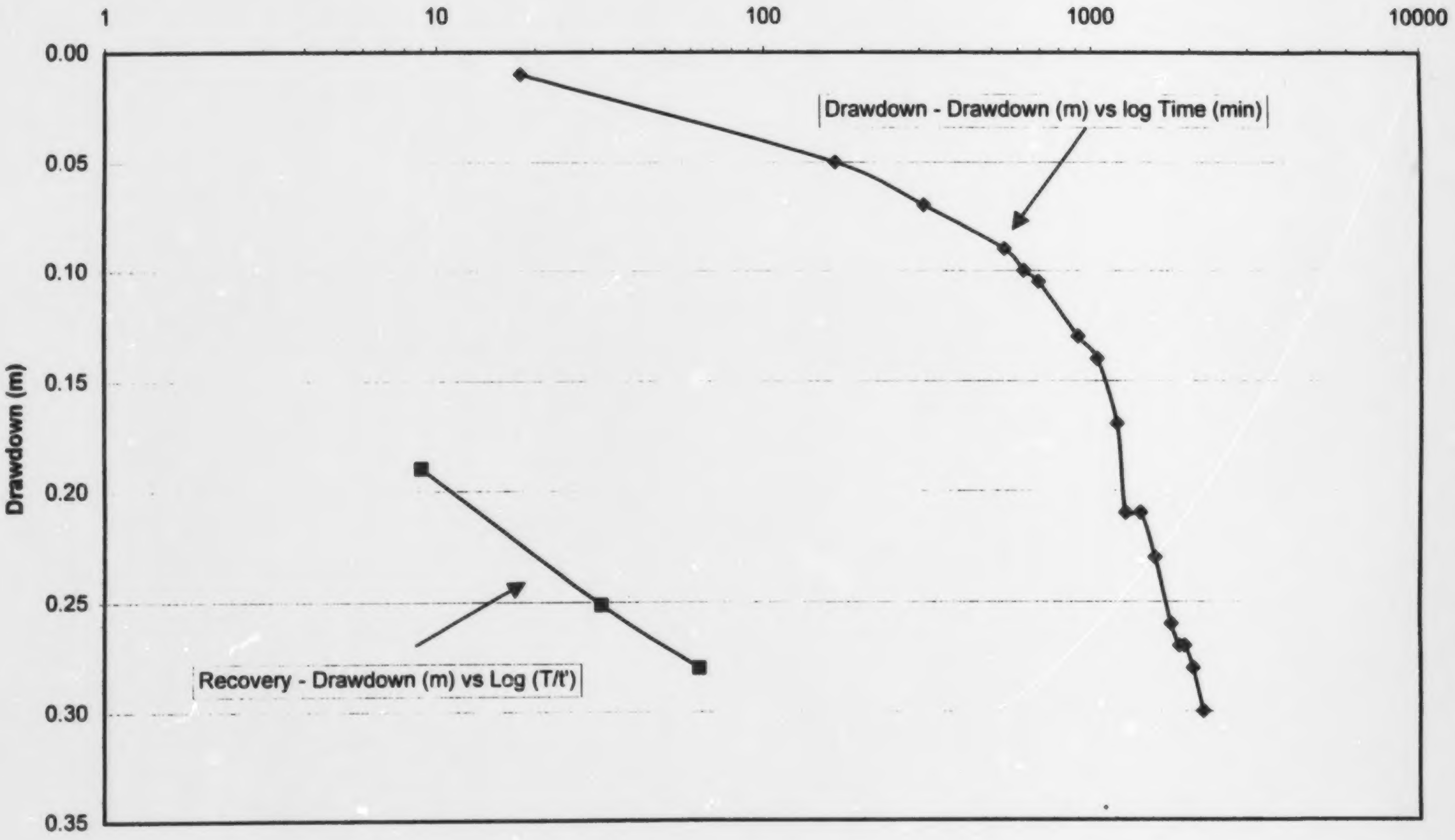
Drawdown Vs. Time Data for MW-00-8D



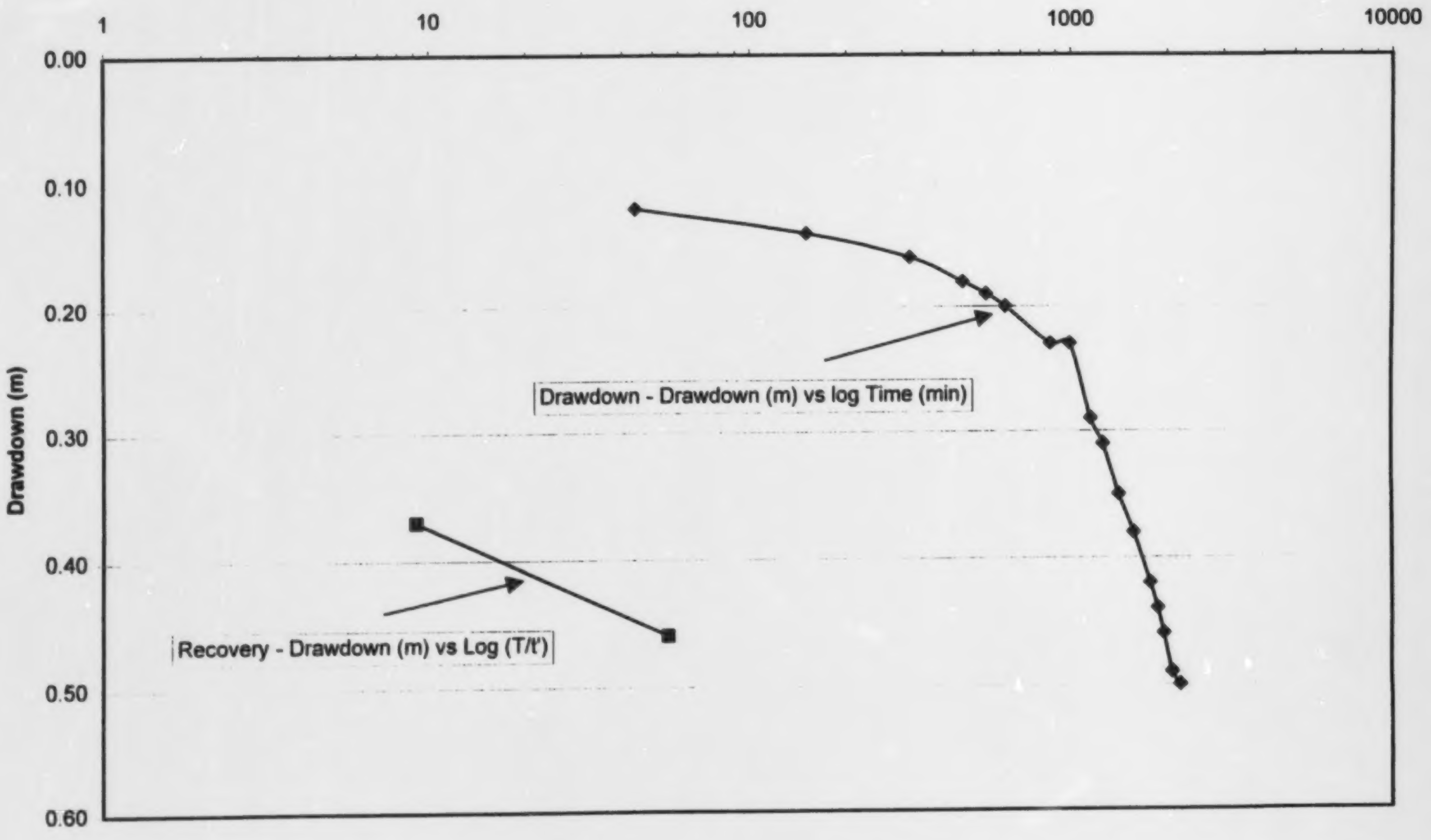
Drawdown Vs. Time Data for MW-00-9S



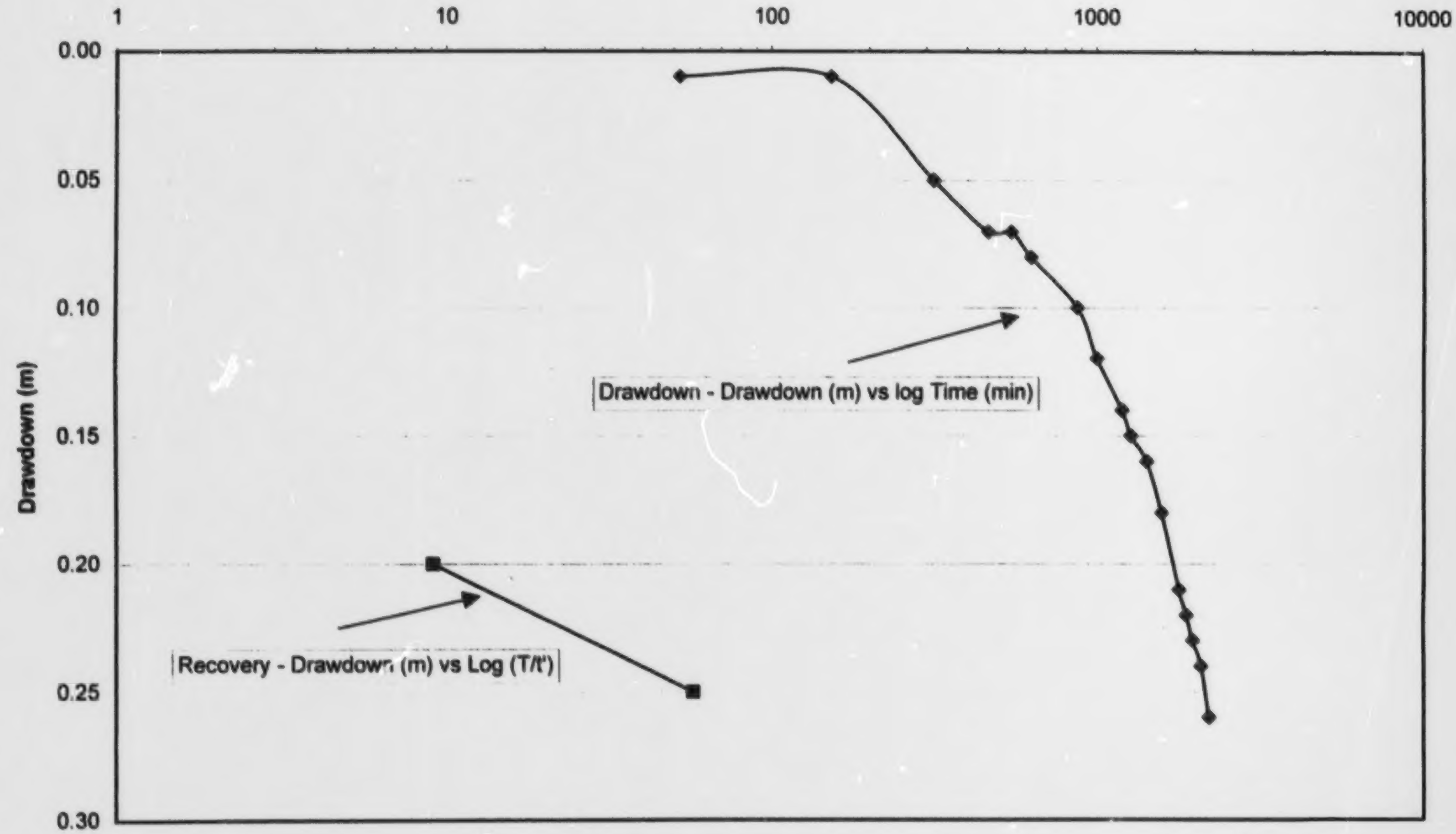
Drawdown Vs. Time Data for MW-00-9D



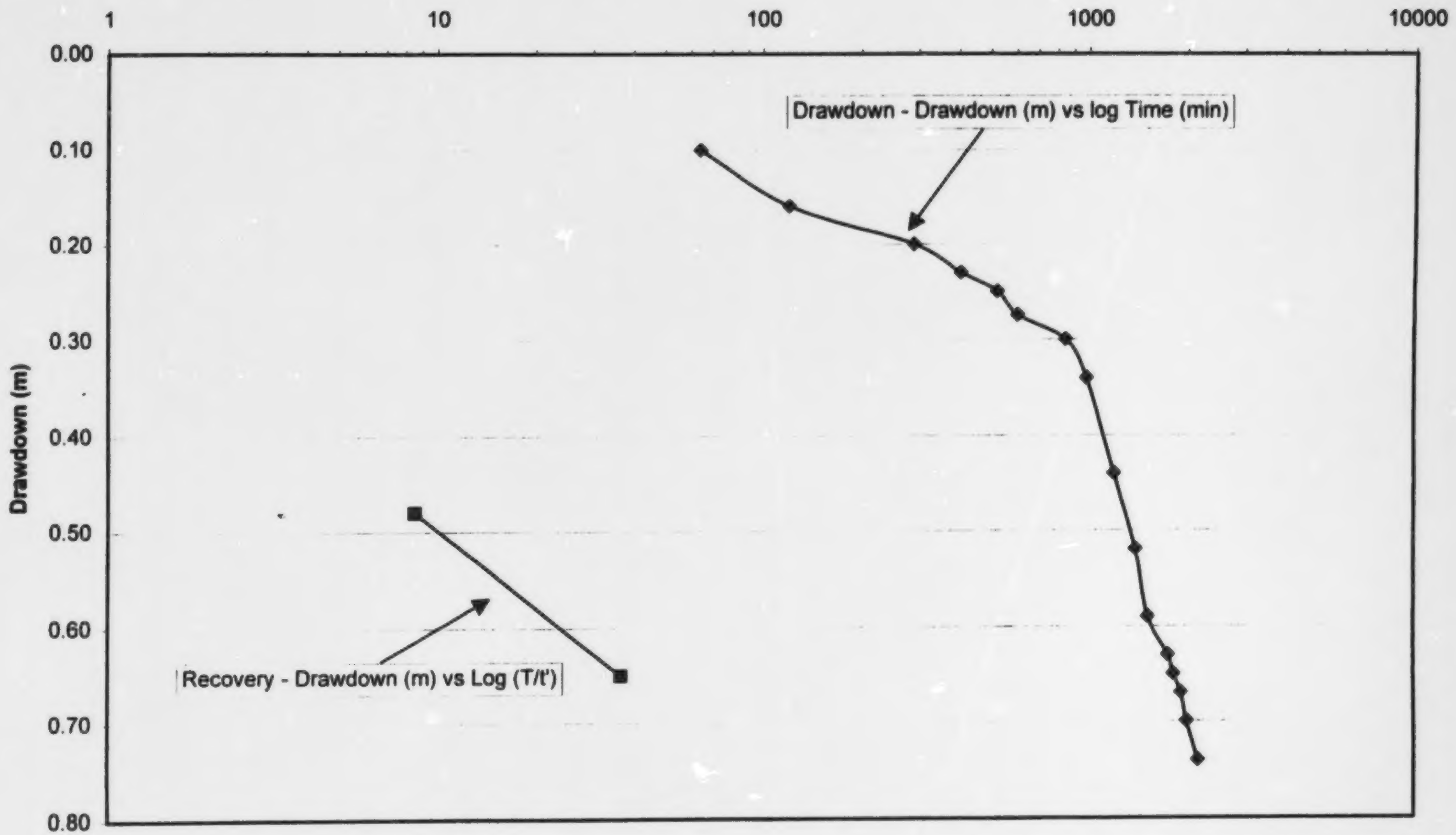
Drawdown Vs. Time Data for MW-00-10S



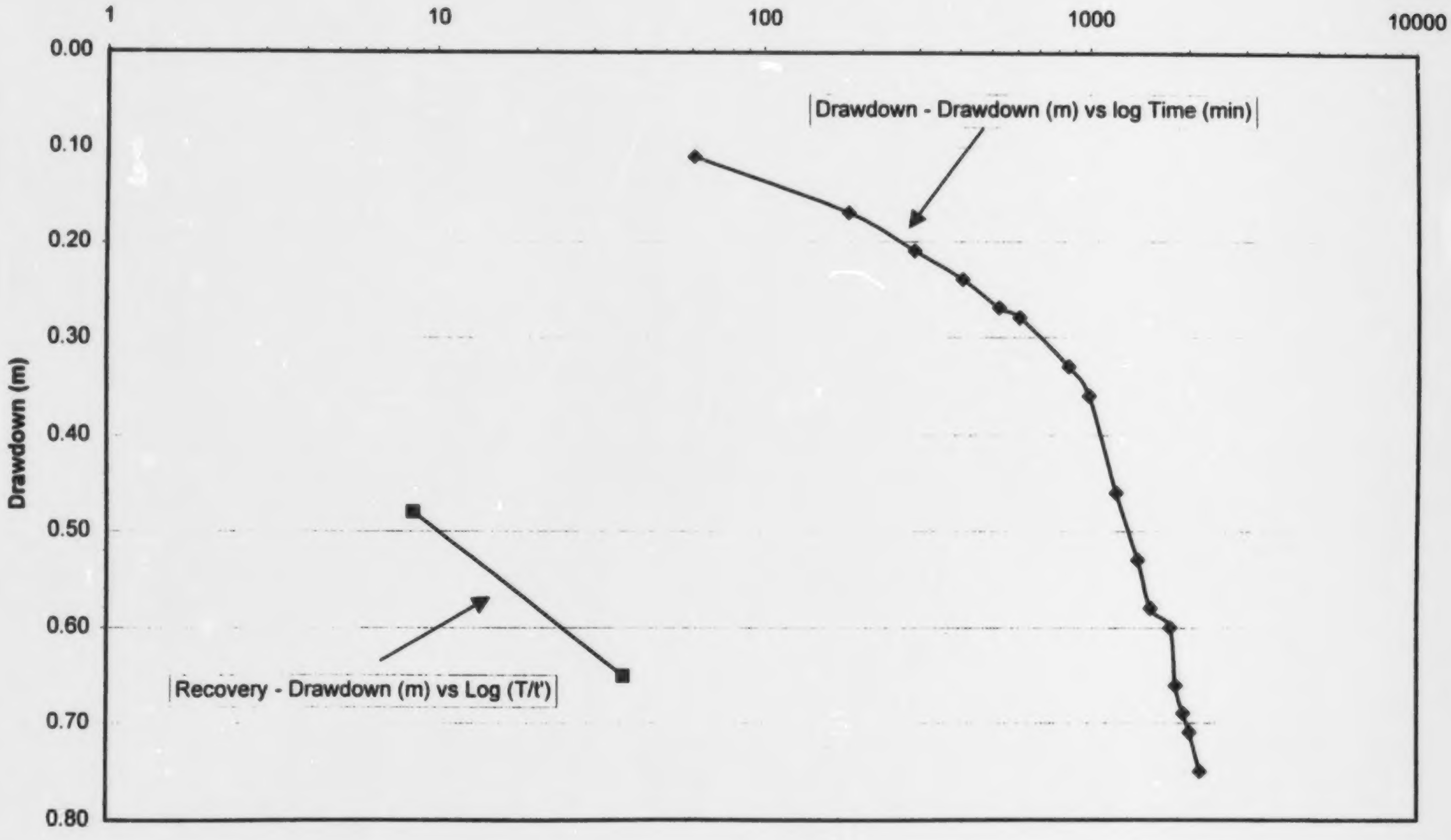
Drawdown Vs. Time Data for MW-00-10D



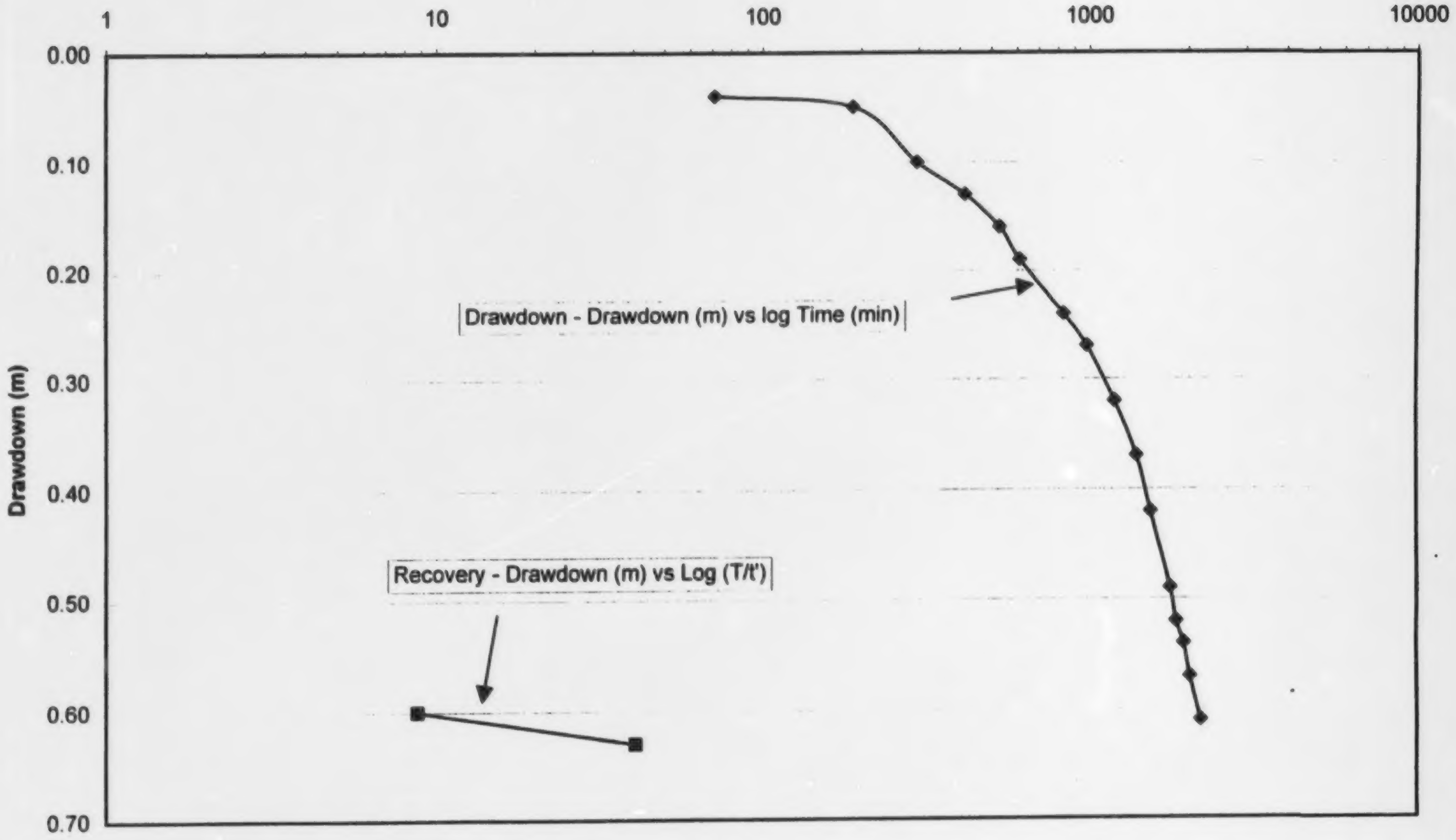
Drawdown Vs. Time Data for MW-00-11S



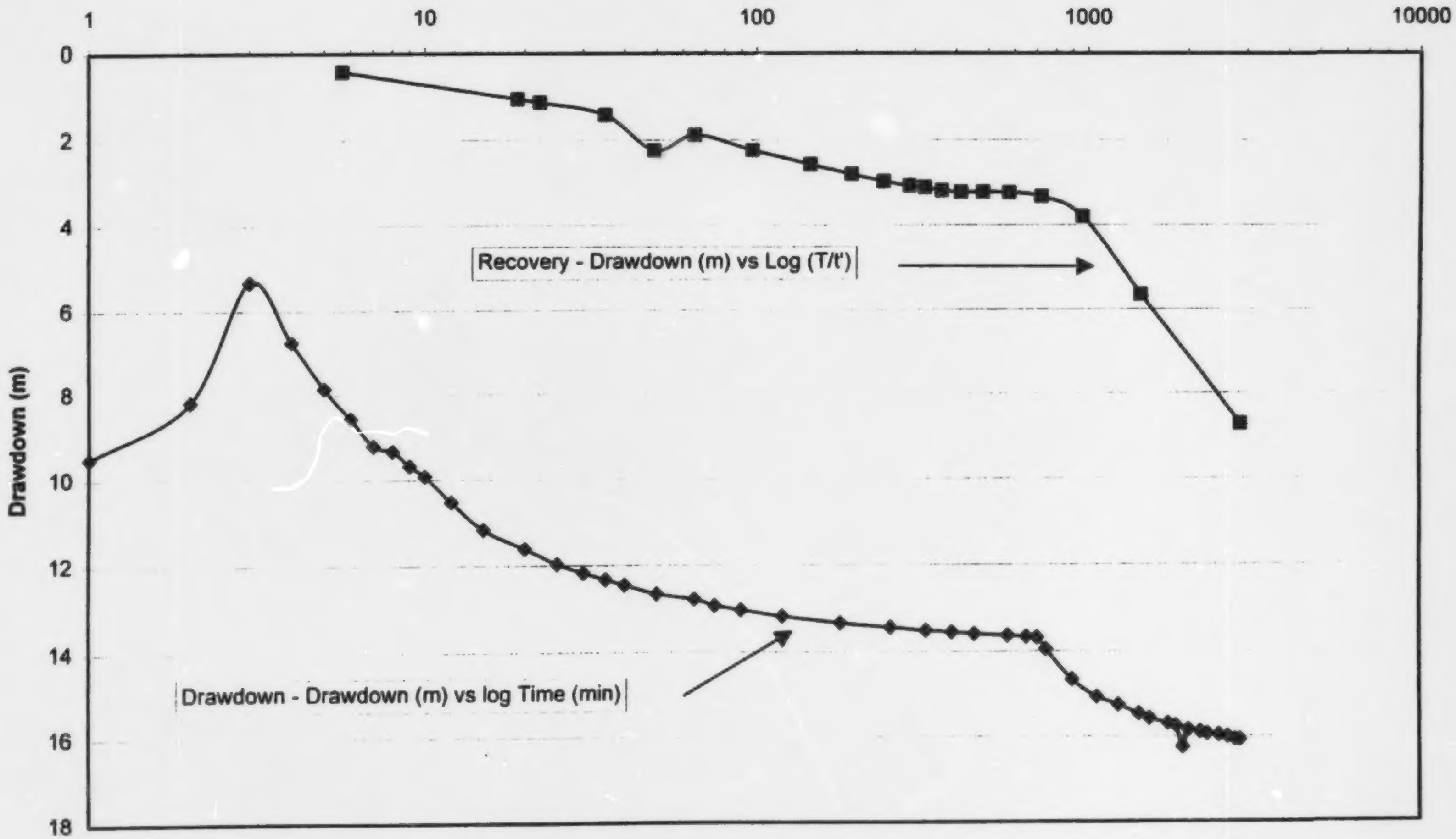
Drawdown Vs. Time Data for MW-00-11D



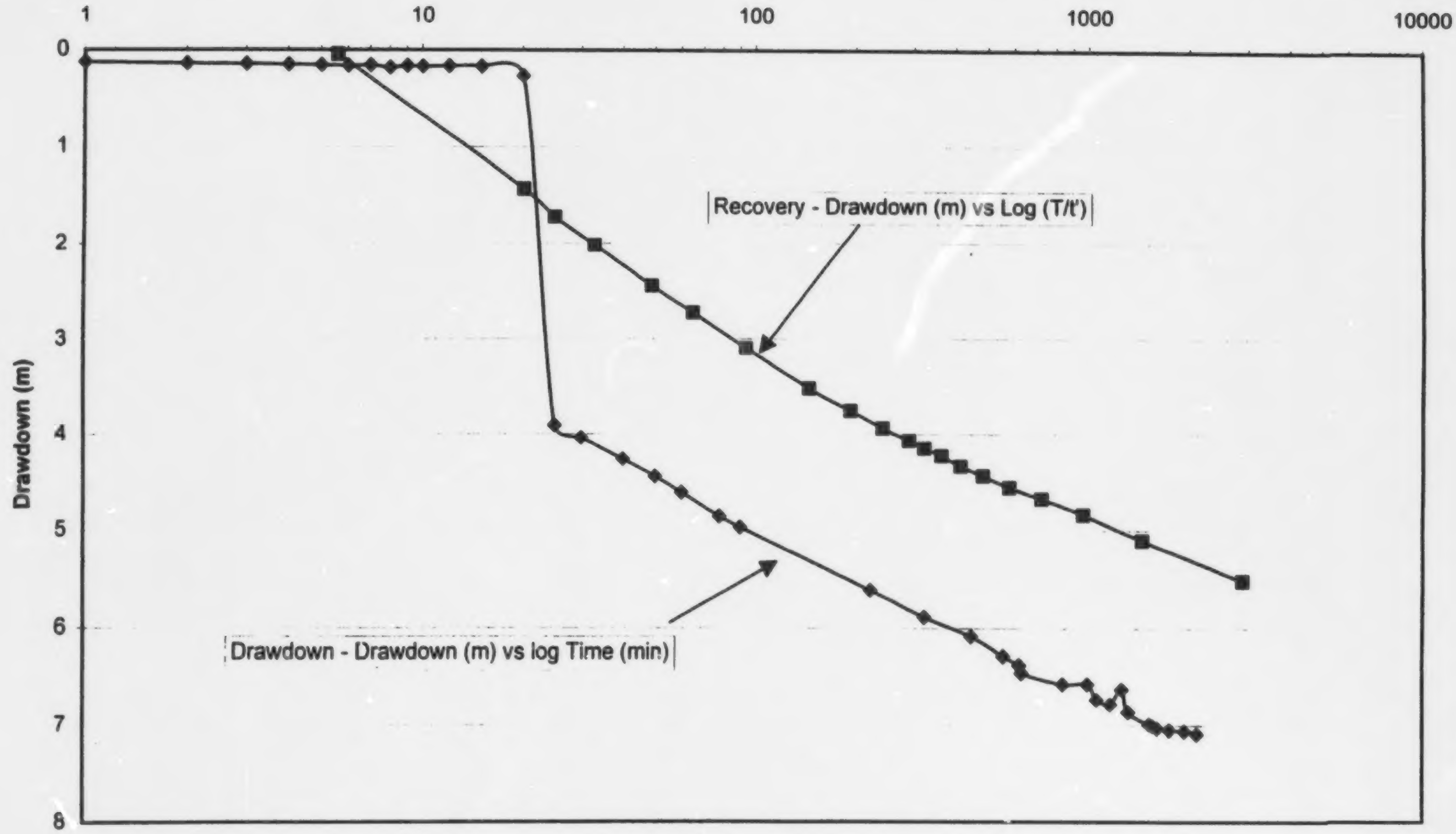
Drawdown Vs. Time Data for MW-00-12D



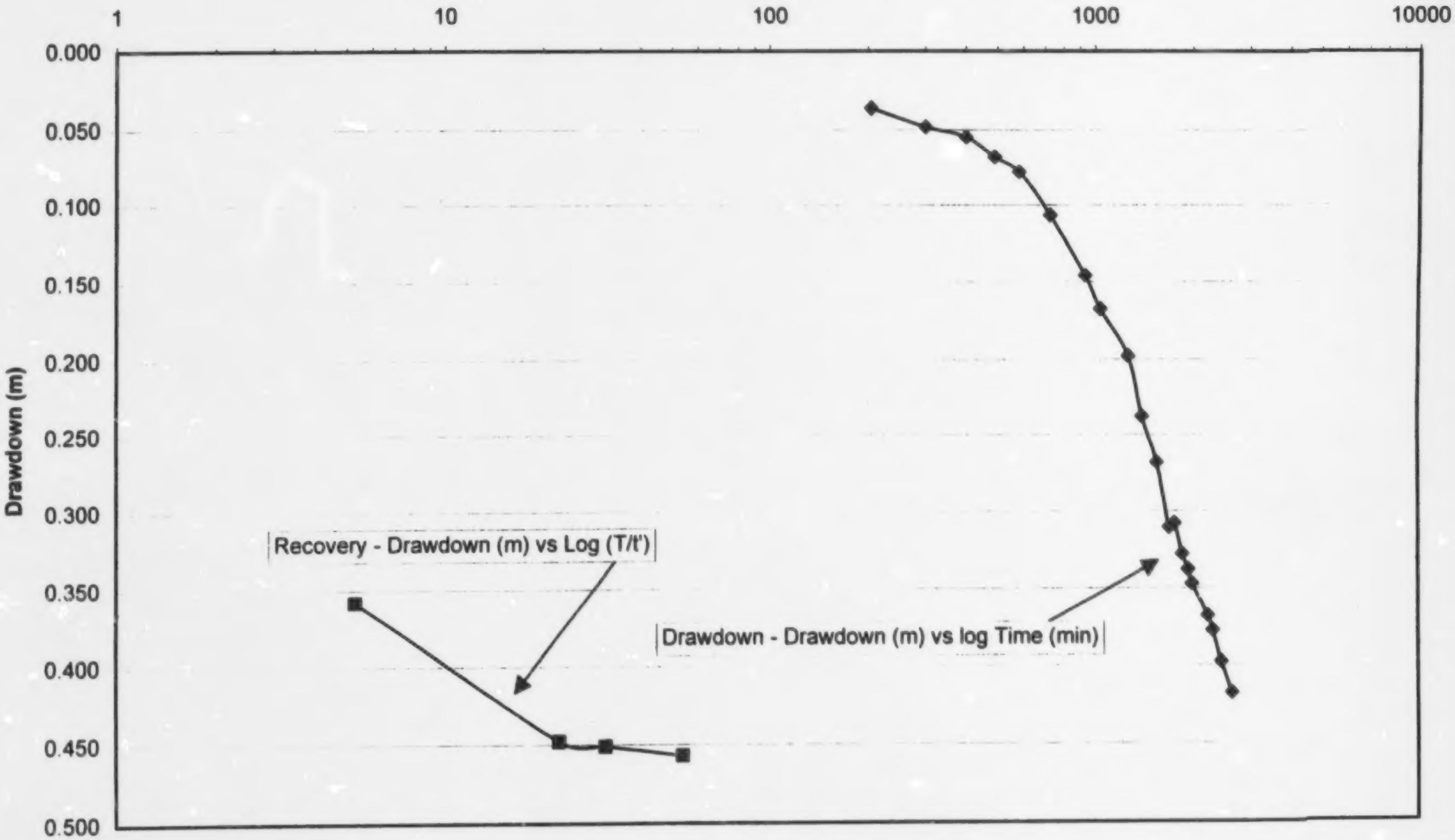
Drawdown Vs. Time Data for Well 6



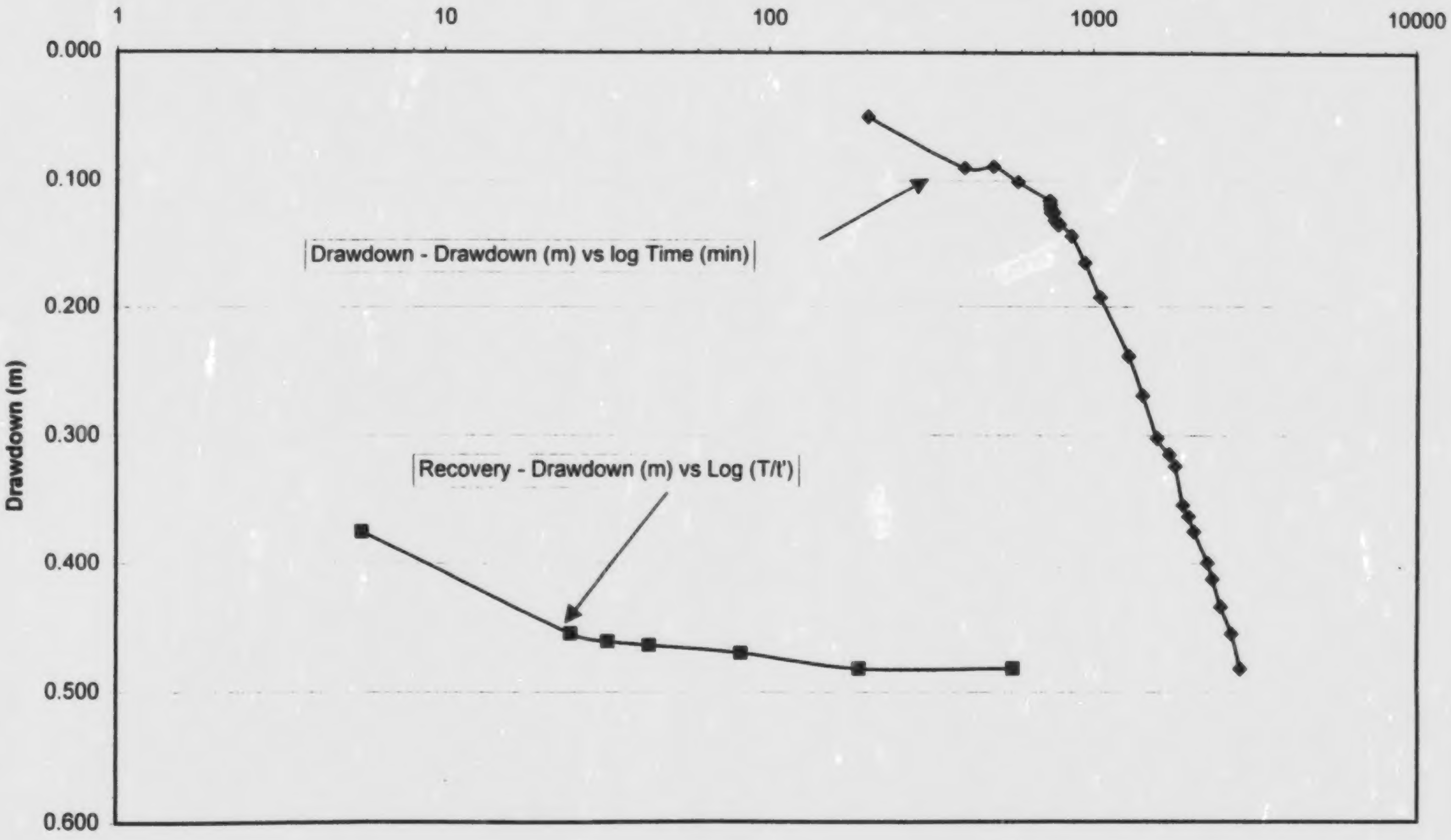
Drawdown Vs. Time Data for Well 7



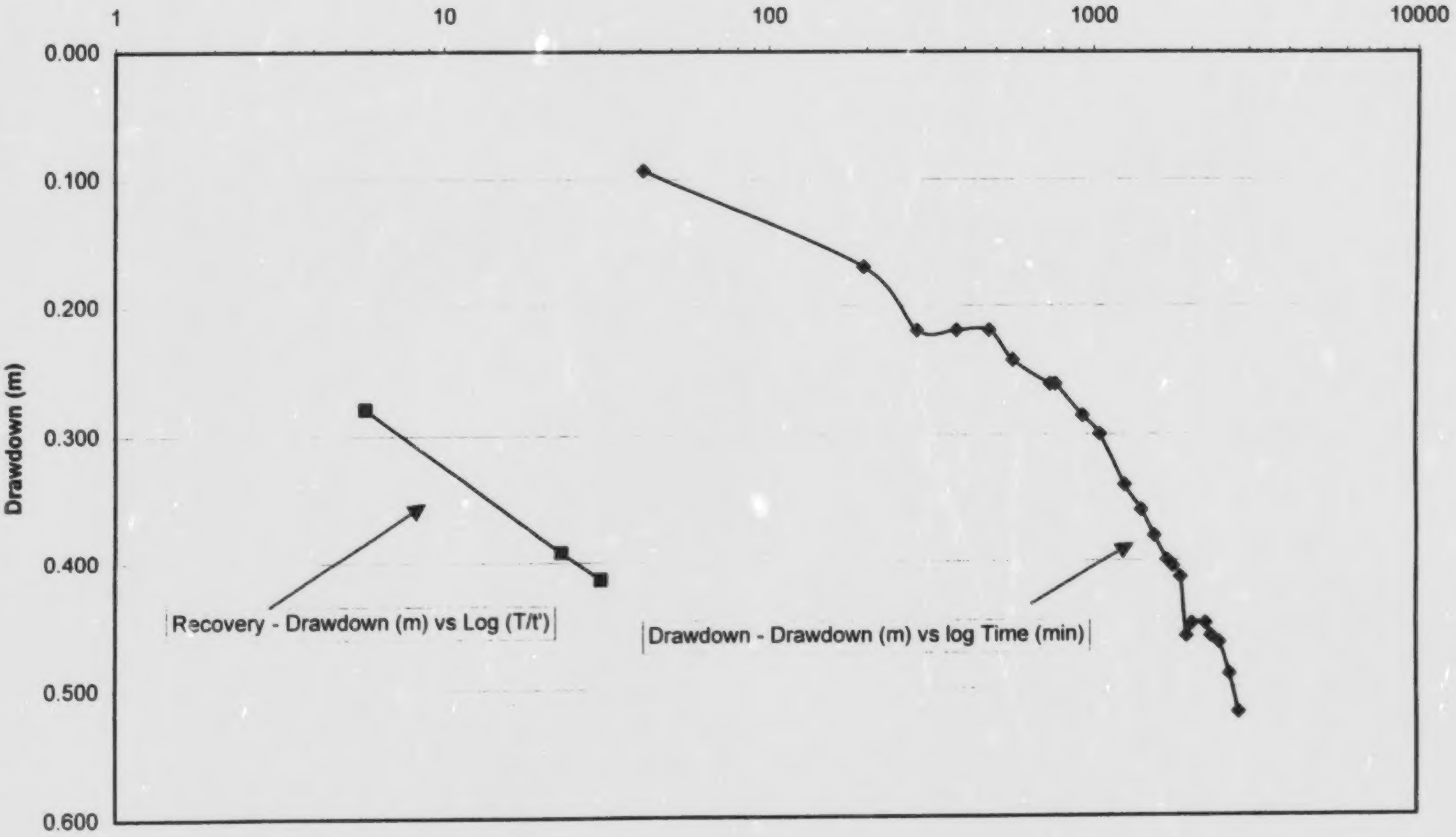
Drawdown Vs. Time Data for MW-00-17S



Drawdown Vs. Time Data for MW-00-17D



Drawdown Vs. Time Data for MW-00-18S



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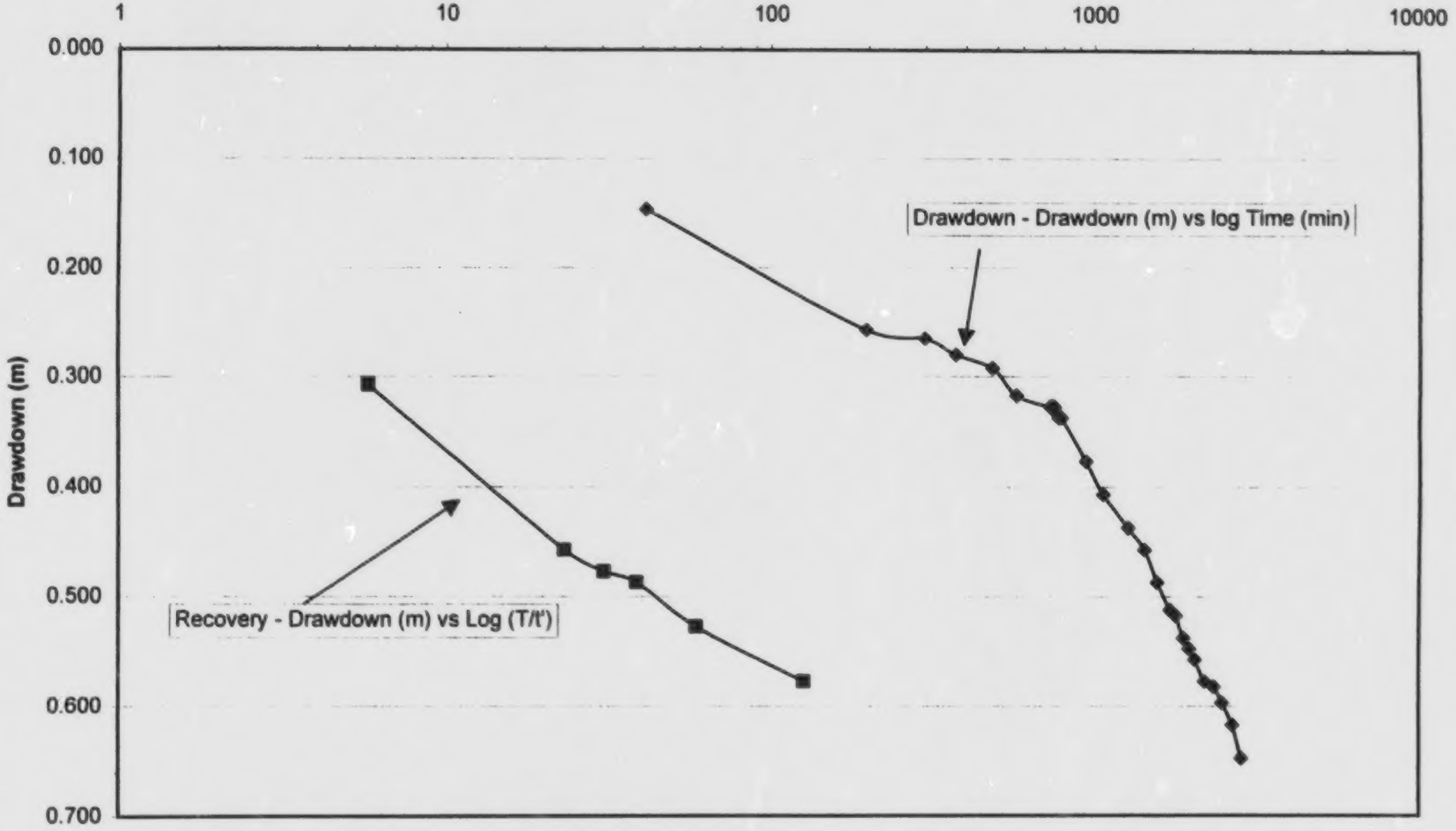
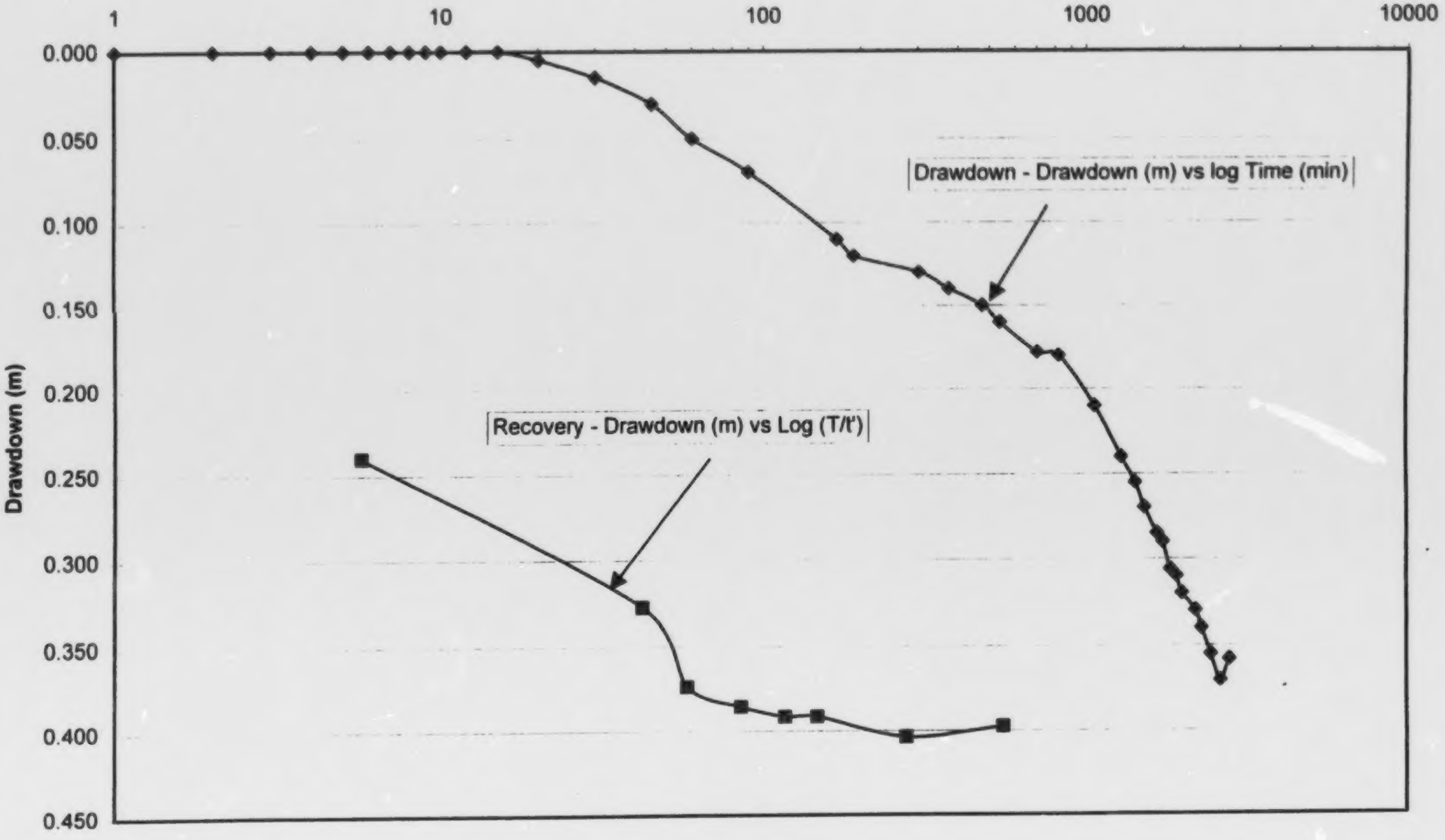
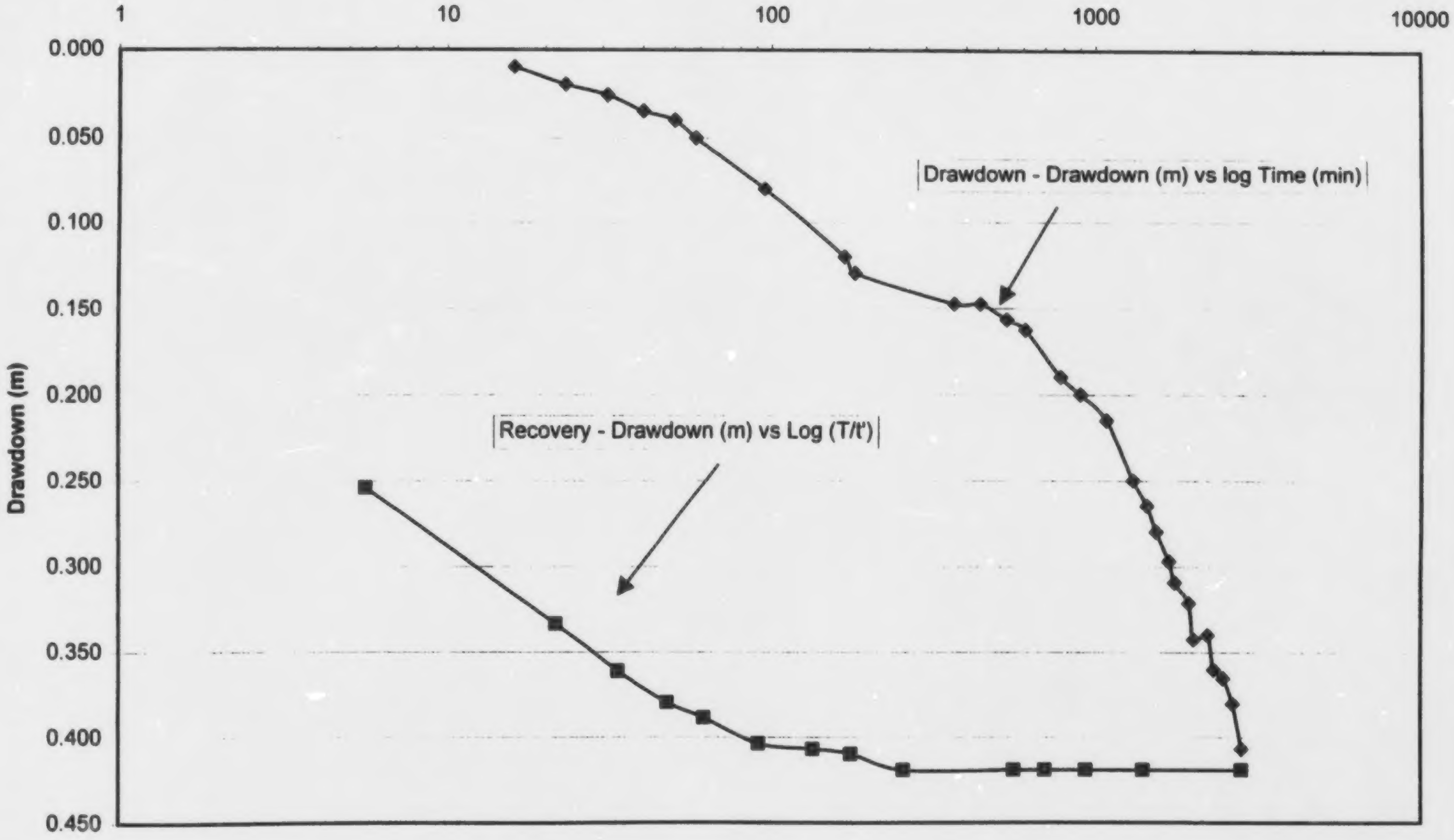


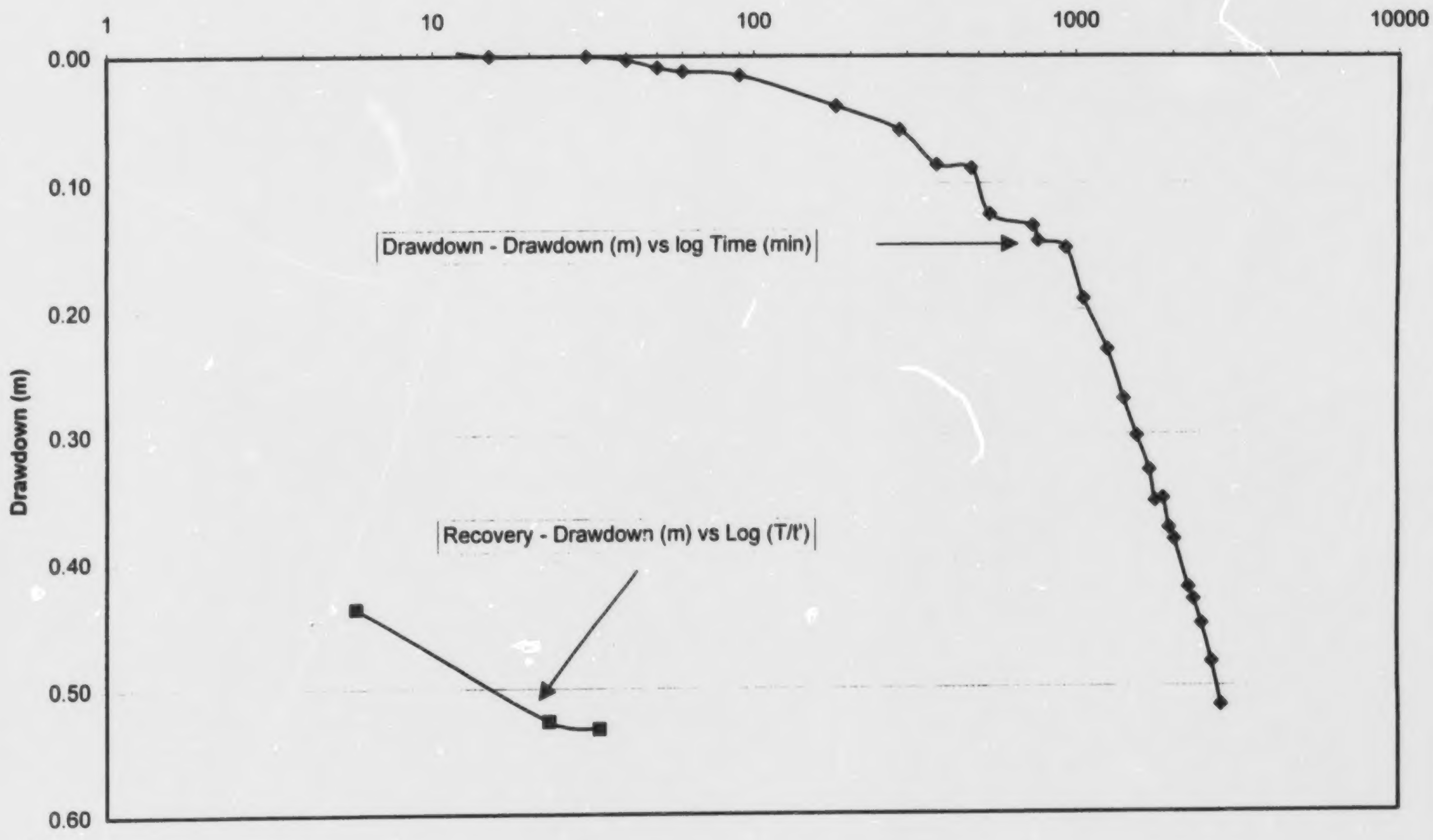
Drawdown Vs. Time Data for MW-00-19S



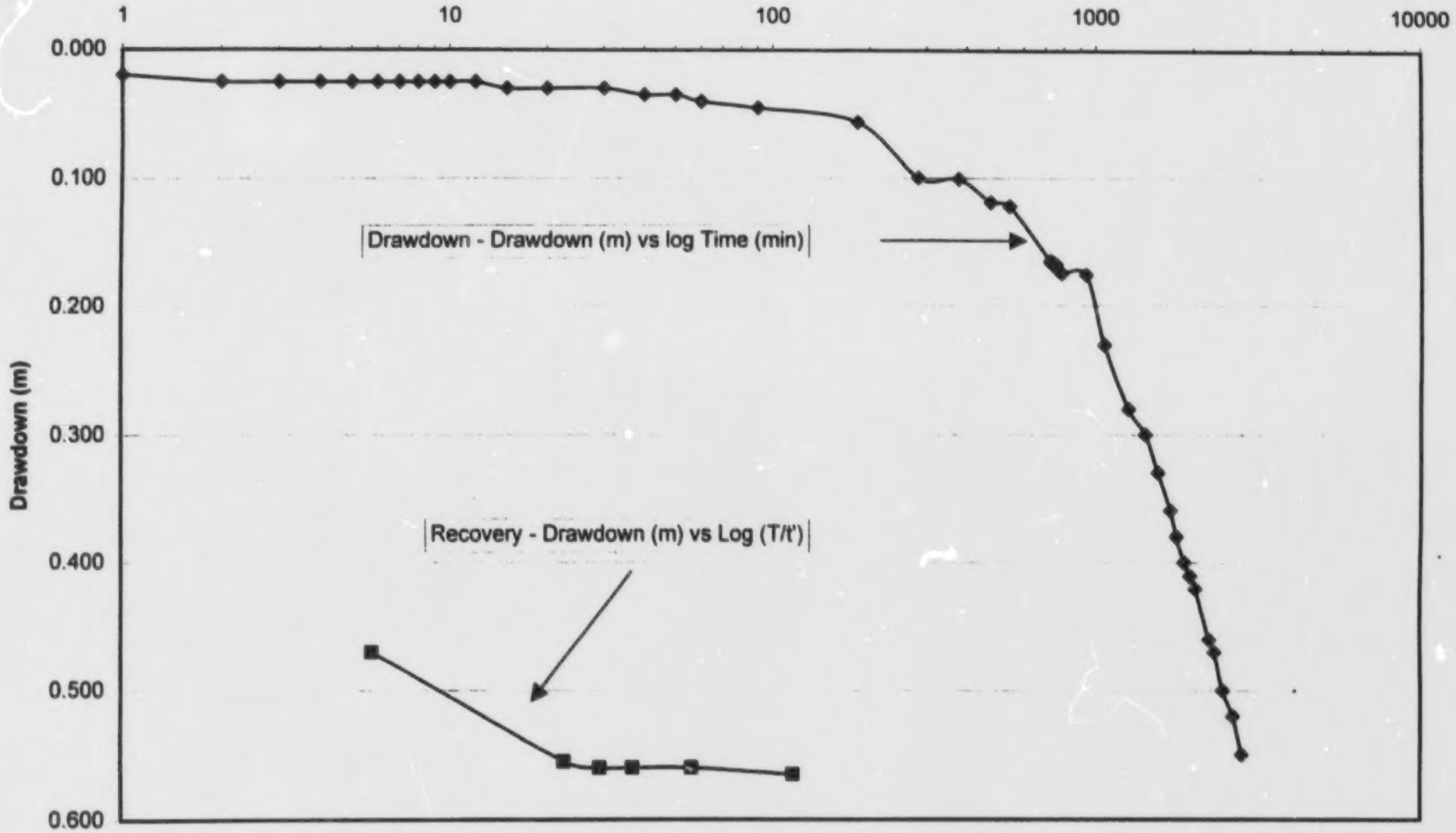
Drawdown Vs. Time Data for MW-00-19D



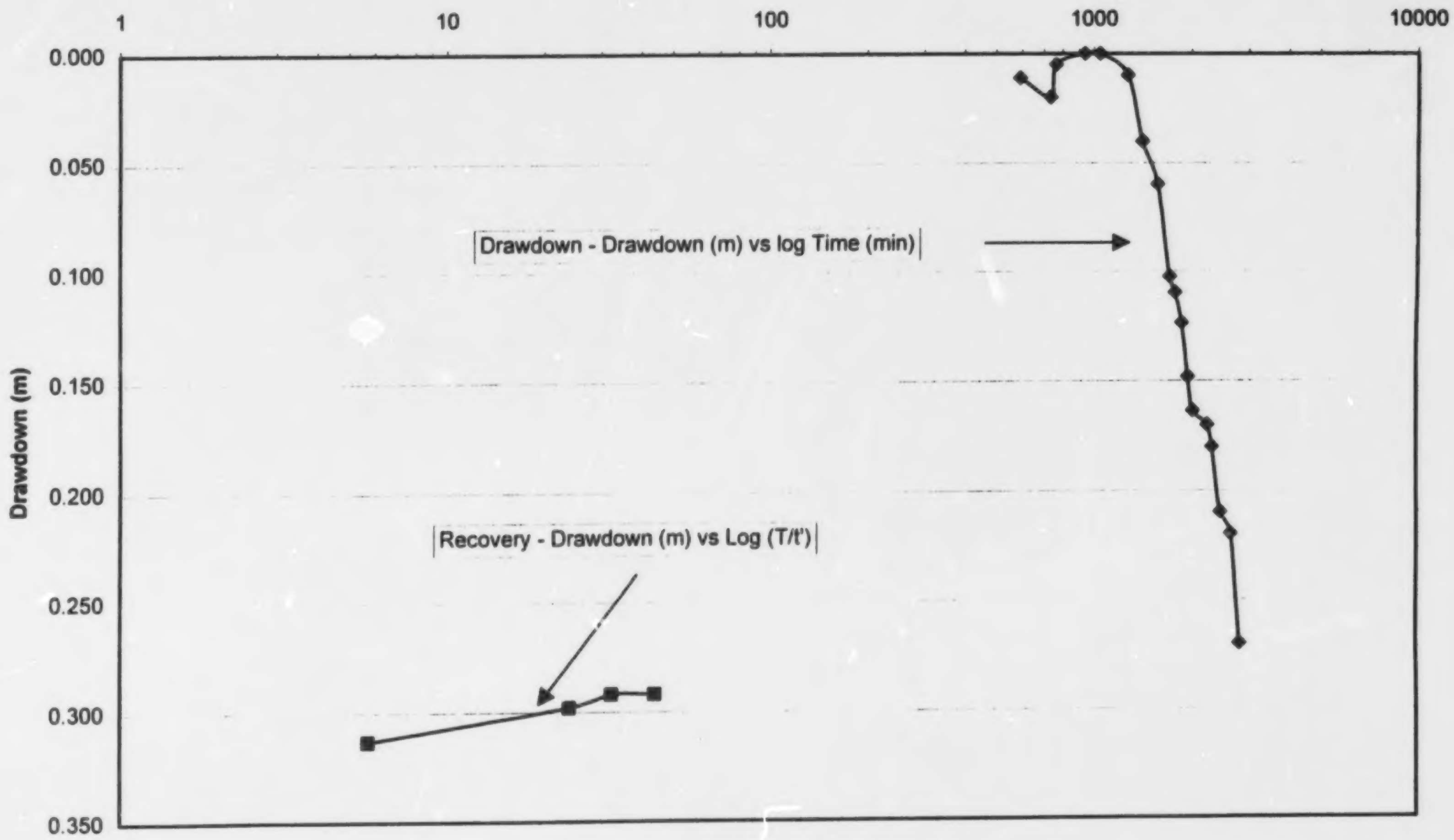
Drawdown Vs. Time Data for MW-00-20S



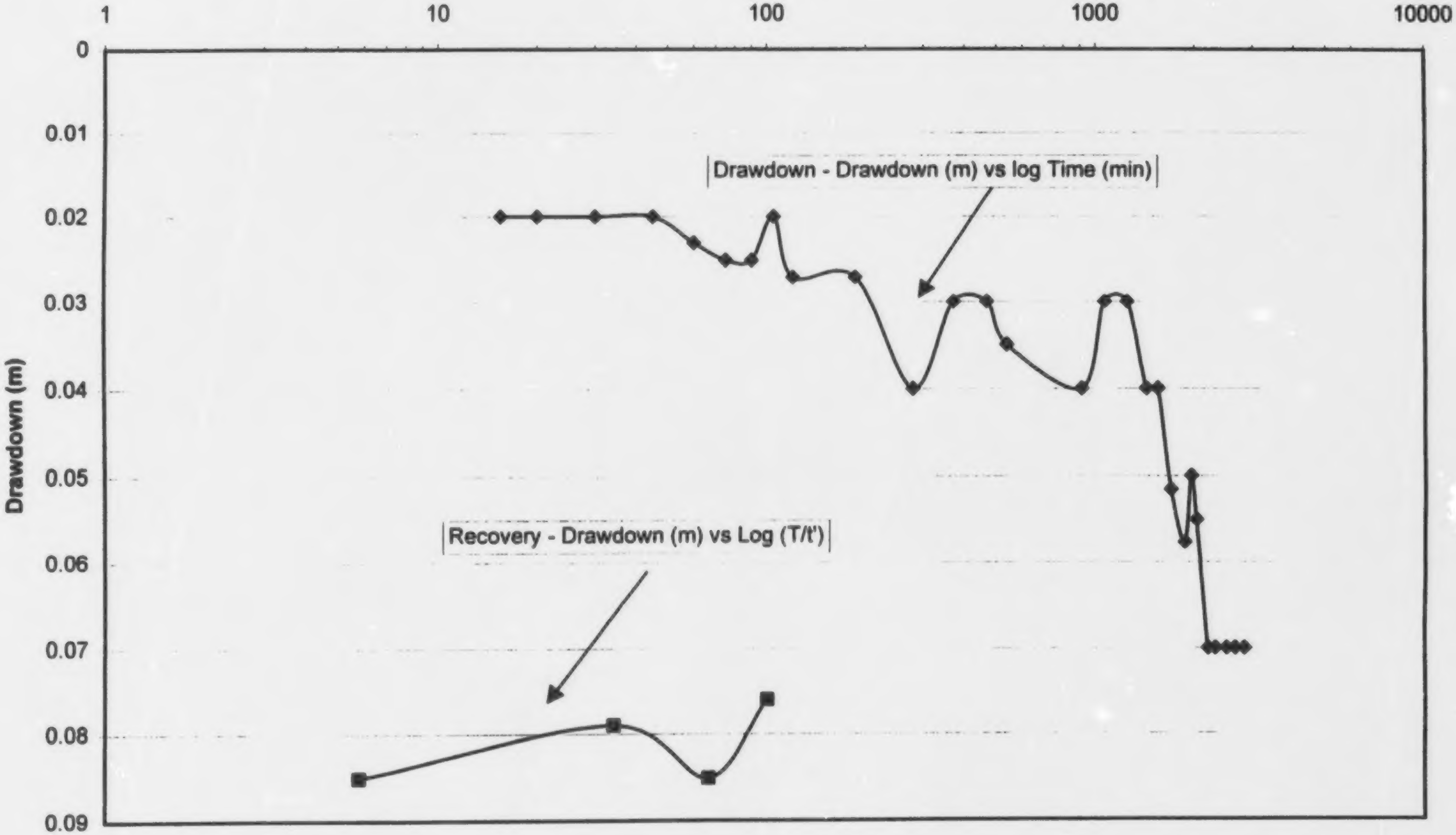
Drawdown Vs. Time Data for MW-00-20D



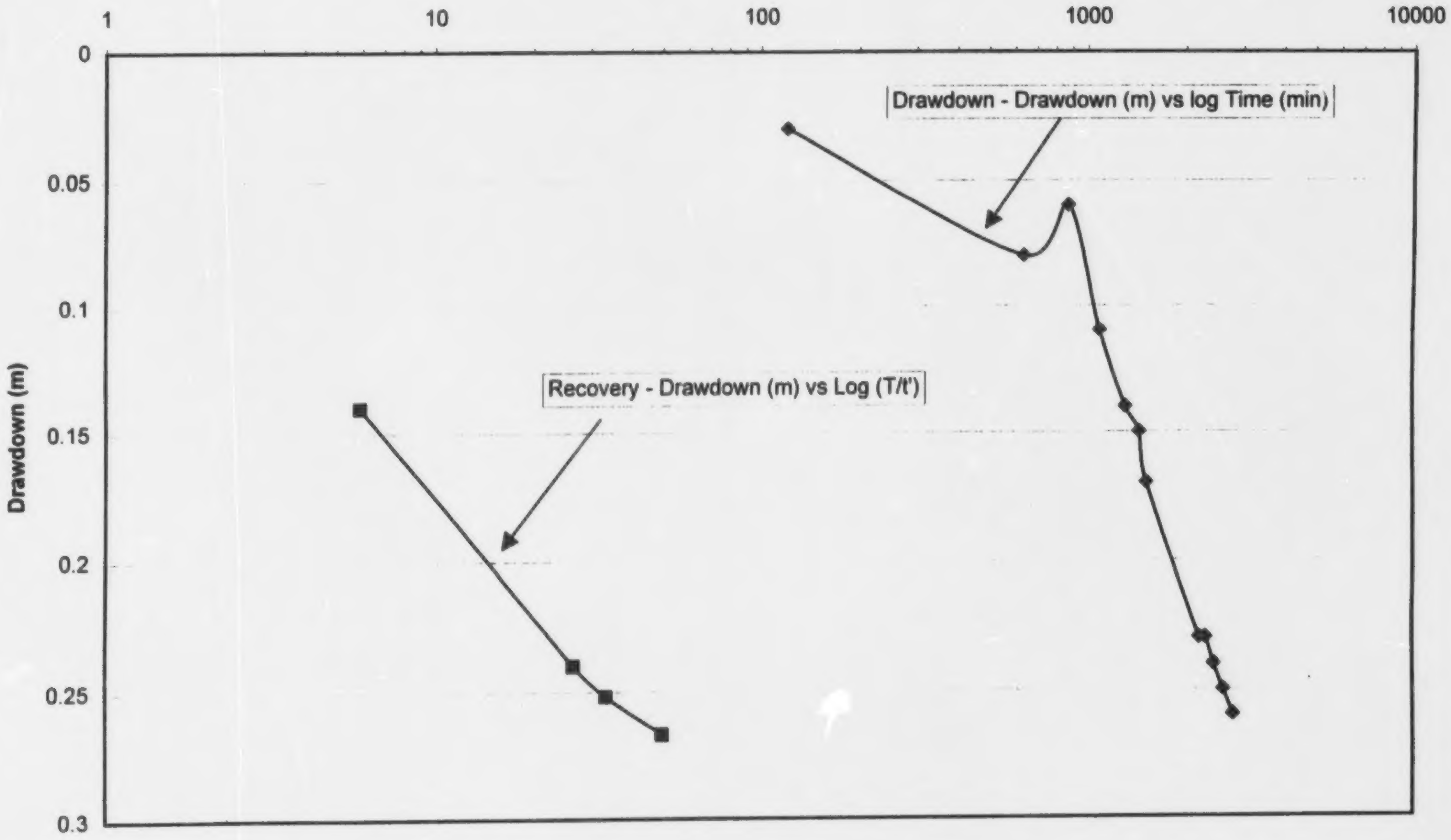
Drawdown Vs. Time Data for MW-00-21



Drawdown Vs. Time Data for MW-00-22



Drawdown Vs. Time Data for MW-00-23



APPENDIX E

CHEMICAL ANALYTICAL REPORTS

Philip Services Corporation

CERTIFICATE OF ANALYSIS

GOLDER ASSOCIATES
SEP - 6 2000
RECEIVED — LONDON

Attention: MR. DAN BROWN
Client Name: Golder Associates Ltd. (London)
Address: 500 Nottinghill Road
London, ON
N6K 3P1
Telephone: 519-471-9600
FAX: 519-471-4707

Laboratory Work Order: 71706

This Certificate of Analysis is for the following:

Sample(s) Received on: 5-Sep-2000 Reported on: 6-Sep-2000
Client Reference: 001-3105
Purchase Order:
Quotation No.:

Results for solid samples are corrected for moisture and reported as dry weight.

Test procedures used are performance based methods referenced from "Standard Methods for the Examination of Water and Wastewater", MOEE, EPA, NIOSH or other published references.

Water samples are discarded 4 weeks after the results have been reported. Solid samples are retained for 3 months. Storage for longer periods requires prior arrangement with the laboratory.

ELECTRONICALLY AUTHORIZED
Signatures to follow on original report.

Reviewed by	Authorized by
Darlene Hoogenes or Kathie Hughes Service Representative	Roger Rioux or Lorraine DaSilva Lab Manager QA Officer

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 6-Sep-2000   Page: 1

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	5-Sep-2000
Work Order:	71706	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024057	Sample Description: Well 6 1 min.				Date & Time Sampled: 4-Sep-2000
	Turbidity	8.21	NTU	0.1	
00-A024058	Sample Description: Well 6 4 min.				Date & Time Sampled: 4-Sep-2000
	Turbidity	4.23	NTU	0.1	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London
Reported: 6-Sep-2000
Page: 2

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71706
Purchase Order:
Date Received: 5-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024059	Sample Description: Well 6 Sept. 4 20:20		Date & Time Sampled: 4-Sep-2000		
	pH Value	7.48	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.06	mg/L	0.05	
	Nitrate as N	3.77	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	3.77	mg/L	0.1	
	Carbon. Diss. Org. as C	0.8	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	698.	us/cm	1	
	Sulphate as SO4	45.	mg/L	2	
	Alkalinity CaCO3	280.	mg/L	1	
	Chloride as Cl	41.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	6.98	mg/L	0.02	
	Calculated Hardness CaCO3	388.	mg/L		
	Turbidity	1.00	NTU	0.1	
	Bicarbonate as HCO3	279.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	8.59	meq/L		
	Total Anions	7.96	meq/L		
	Ion Balance	3.81	% diff.		
	Calculated T.D.S.	431.	mg/L		
	Calculated Conductivity	801.	us/cm		
	Saturation pH @4C	7.44	pH units		
	Saturation pH @20C	7.04	pH units		
	Langelier Index @4C	0.04			
	Langelier Index @20C	0.44			
00-A024059	Sample Description: Well 6 Sept. 4 20:20		Date & Time Sampled: 4-Sep-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client: (1093) Golder Associates Ltd. (London). London   Reported: 6-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71706

Purchase Order:
Date Received: 5-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024059	Sample Description: Well 6 Sept. 4 20:20		Date & Time Sampled: 4-Sep-2000		
	Barium Ba	0.09	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	99.2	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	0.04	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	34.0	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.35	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	18.6	mg/L	0.5	
	Strontium Sr	2.64	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.11	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London
Reported: 6-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71706
Purchase Order:
Date Received: 5-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024060	Sample Description: Well 7 Sept. 5 08:20		Date & Time Sampled: 5-Sep-2000		
	pH Value	7.59	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	< 0.05	mg/L	0.05	
	Nitrate as N	0.51	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	0.51	mg/L	0.1	
	Carbon, Diss. Org. as C	< 0.5	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	666.	us/cm	1	
	Sulphate as SO4	116.	mg/L	2	
	Alkalinity CaCO3	247.	mg/L	1	
	Chloride as Cl	10.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	6.44	mg/L	0.02	
	Calculated Hardness CaCO3	400.	mg/L		
	Turbidity	0.12	NTU	0.1	
	Bicarbonate as HCO3	246.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	8.22	meq/L		
	Total Anions	7.67	meq/L		
	Ion Balance	3.46	% diff.		
	Calculated T.D.S.	428.	mg/L		
	Calculated Conductivity	793.	us/cm		
	Saturation pH @4C	7.46	pH units		
	Saturation pH @20C	7.06	pH units		
	Langelier Index @4C	0.13			
	Langelier Index @20C	0.53			
00-A024060	Sample Description: Well 7 Sept. 5 08:20		Date & Time Sampled: 5-Sep-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London
Reported: 6-Sep-2000
Page: 5

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71706
Purchase Order:
Date Received: 5-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024060	Sample Description: Well 7 Sept. 5 08:20		Date & Time Sampled: 5-Sep-2000		
	Barium Ba	0.12	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	107.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	32.2	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	0.90	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	4.80	mg/L	0.5	
	Strontium Sr	12.9	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.05	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

GOLDER ASSOCIATES
SEP 11 2000
RECEIVED — LONDON

Client:(1093) Golder Associates Ltd. (London). London Reported:11-Sep-2000 Page: 1

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	6-Sep-2000
Work Order:	71723	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024259	Sample Description: Chambers Pond'		Date & Time Sampled:	6-Sep-2000	
	pH Value	8.42	pH units	0.1	
	Ammonia as N	0.45	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.73	mg/L	0.05	
	Nitrate as N	< 0.1	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	< 0.1	mg/L	0.1	
	Carbon, Diss. Org. as C	3.9	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	353.	us/cm	1	
	Sulphate as SO4	22.	mg/L	2	
	Alkalinity CaCO3	141.	mg/L	1	
	Chloride as Cl	19.	mg/L	1	
	Colour	8.	TCU	5	
	Silica, Reactive as SiO2	2.11	mg/L	0.02	
	Calculated Hardness CaCO3	193.	mg/L	In Progress	
	Turbidity	2.34	NTU	0.1	
	Bicarbonate as HCO3	137.	mg/L	In Progress	
	Carbonate CO3	3.	mg/L	In Progress	
	Total Cation	4.42	meq/L	In Progress	
	Total Anions	3.81	meq/L	In Progress	
	Ion Balance	7.37	% diff.	In Progress	
	Calculated T.D.S.	200.	mg/L	In Progress	
	Calculated Conductivity	401.	us/cm	In Progress	
	Saturation pH @4C	8.23	pH units	In Progress	
	Saturation pH @20C	7.83	pH units	In Progress	
	Langelier Index @4C	0.19		In Progress	
	Langelier Index @20C	0.59		In Progress	
00-A024259	Sample Description: Chambers Pond		Date & Time Sampled:	6-Sep-2000	
	Aluminum Al	0.13	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London　Reported:11-Sep-2000　Page: 2

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	6-Sep-2000
Work Order:	71723	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024259	Sample Description: Chambers Pond				Date & Time Sampled: 6-Sep-2000
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.03	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	30.0	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.18	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	28.7	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.11	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	11.5	mg/L	0.5	
	Strontium Sr	0.18	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	< 0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

GOLDER ASSOCIATES
SEP - 7 2000
RECEIVED — LONDON

Attention: MR. DAN BROWN
Client Name: Golder Associates Ltd. (London)
Address: 500 Nottinghill Road
London, ON
N6K 3P1
Telephone: 519-471-9600
FAX: 519-471-4707

Laboratory Work Order: 71608

This Certificate of Analysis is for the following:

Sample(s) Received on: 31-Aug-2000 Reported on: 7-Sep-2000
Client Reference: 001-3105
Purchase Order:
Quotation No.:

Results for solid samples are corrected for moisture and reported as dry weight.

Test procedures used are performance based methods referenced from "Standard Methods for the Examination of Water and wastewater", MOEE, EPA, NIOSH or other published references.

Water samples are discarded 4 weeks after the results have been reported. Solid samples are retained for 3 months. Storage for longer periods requires prior arrangement with the laboratory.

ELECTRONICALLY AUTHORIZED
Signatures to follow on original report.

Reviewed by	Authorized by		
Darlene Hoogenes or Kathie Hughes	Roger Rioux	or	Lorraine DaSilva
Service Representative	Lab Manager		QA Officer

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 7-Sep-2000   Page: 1

Attention: MR. DAN BROWN   Purchase Order:
Client Reference: 001-3105   Date Received: 31-Aug-2000
Work Order: 71608   Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023829	Sample Description: Well 5 0020		Date & Time Sampled: 30-Aug-2000		
	pH Value	7.36	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.23	mg/L	0.05	
	Nitrate as N	5.49	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	5.49	mg/L	0.1	
	Carbon, Diss. Org. as C	0.9	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	613.	us/cm	1	
	Sulphate as SO4	21.	mg/L	2	
	Alkalinity CaCO3	266.	mg/L	1	
	Chloride as Cl	21.	mg/L	1	
	Colour	8.	TCU	5	
	Silica, Reactive as SiO2	7.32	mg/L	0.02	
	Calculated Hardness CaCO3	334.	mg/L		
	Turbidity	0.23	NTU	0.1	
	Bicarbonate as HCO3	265.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	7.27	meq/L		
	Total Anions	6.74	meq/L		
	Ion Balance	3.79	% diff.		
	Calculated T.D.S.	362.	mg/L		
	Calculated Conductivity	644.	us/cm		
	Saturation pH @4C	7.52	pH units		
	Saturation pH @20C	7.12	pH units		
	Langelier Index @4C	-0.16			
	Langelier Index @20C	0.24			
00-A023829	Sample Description: Well 5 0020		Date & Time Sampled: 30-Aug-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 7-Sep-2000   Page: 2

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	31-Aug-2000
Work Order:	71608	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023829	Sample Description: Well 5 0020		Date & Time Sampled: 30-Aug-2000		
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	85.3	mg/L	0.05	
	Chromium Cr	0.16	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.65	mg/L	0.02	
	Lead Pb	0.008	mg/L	0.001	
	Magnesium Mg	29.3	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	0.08	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.35	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	13.1	mg/L	0.5	
	Strontium Sr	0.22	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

PSC
PHILIP SERVICES

CERTIFICATE OF ANALYSIS

GOLDER ASSOCIATES
SEP 11 2000
RECEIVED LONDON

Attention: MR. DAN BROWN
Client Name: Golder Associates Ltd. (London)
Address: 500 Nottinghill Road
London, ON
N6K 3P1
Telephone: 519-471-9600
FAX: 519-471-4707

Laboratory Work Order: 71857

This Certificate of Analysis is for the following:

Sample(s) Received on: 7-Sep-2000 Reported on: 11-Sep-2000
Client Reference: 001-3105
Purchase Order:
Quotation No.:

Certificate of Quality Control enclosed
Hold Time Report enclosed

Results for solid samples are corrected for moisture and reported as dry weight.

Test procedures used are performance based methods referenced from "Standard Methods for the Examination of Water and Wastewater". MOEE, EPA, NIOSH or other published references.

Water samples are discarded 4 weeks after the results have been reported. Solid samples are retained for 3 months. Storage for longer periods requires prior arrangement with the laboratory.

Dave Stallard

Reviewed by
Darlene Hoogenes or Kathie Hughes
Service Representative

Authorized by
Roger Rioux or Lorraine DaSilva
General Manager QA Scientist

Philip Analytical Services Inc.
921 LEATHORNE STREET, LONDON, ONTARIO, CANADA N5Z 3M7 (519) 686-7558 1-800-268-7396 FAX (519) 686-6374

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London

Reported:11-Sep-2000

Page: 1

Attention: MR. DAN BROWN

Client Reference: 001-3105

Work Order: 71857

Purchase Order:

Date Received: 7-Sep-2000

Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00 A024513	Sample Description: MW00-17s		Date & Time Sampled: 7-Sep-2000		
	pH Value	7.49	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.19	mg/L	0.05	
	Nitrate as N	4.25	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	4.25	mg/L	0.1	
	Carbon, Diss. Org. as C	0.9	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1230	us/cm	1	
	Sulphate as SO4	18.	mg/L	2	
	Alkalinity CaCO3	300.	mg/L	1	
	Chloride as Cl	227.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.90	mg/L	0.02	
	Calculated Hardness CaCO3	414.	mg/L		
	Turbidity	21.4	NTU	0.1	
	Bicarbonate as HCO3	299.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	13.62	meq/L		
	Total Anions	13.08	meq/L		
	Ion Balance	2.03	% diff.		
	Calculated T.D.S.	720.	mg/L		
	Calculated Conductivity	1472.	us/cm		
	Saturation pH @4C	7.39	pH units		
	Saturation pH @20C	6.99	pH units		
	Langelier Index @4C	0.10			
	Langelier Index @20C	0.50			
00-A024513	Sample Description: MW00-17s		Date & Time Sampled: 7-Sep-2000		
	Aluminum Al	0.62	mg/L	0.03	

EXPLANATION OF CODES

EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:11-Sep-2000 Page: 2

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	7-Sep-2000
Work Order:	71857	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024513	Sample Description: MW00-17s		Date & Time Sampled:	7-Sep-2000	
	Barium Ba	0.08	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.05	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	111.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.48	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	33.2	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	0.03	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.37	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	121.	mg/L	0.5	
	Strontium Sr	0.30	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.03	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:11-Sep-2000 Page: 3

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71857
Purchase Order:
Date Received: 7-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024514	Sample Description: MW00-17d		Date & Time Sampled: 7-Sep-2000		
	pH Value	7.48	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.19	mg/L	0.05	
	Nitrate as N	3.31	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	3.31	mg/L	0.1	
	Carbon, Diss. Org. as C	0.9	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1370	us/cm	1	
	Sulphate as SO4	13.	mg/L	2	
	Alkalinity CaCO3	320.	mg/L	1	
	Chloride as Cl	270.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.01	mg/L	0.02	
	Calculated Hardness CaCO3	438.	mg/L		
	Turbidity	3.68	NTU	0.1	
	Bicarbonate as HCO3	319.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	15.14	meq/L		
	Total Anions	14.52	meq/L		
	Ion Balance	2.08	% diff.		
	Calculated T.D.S.	799.	mg/L		
	Calculated Conductivity	1652.	us/cm		
	Saturation pH @4C	7.33	pH units		
	Saturation pH @20C	6.93	pH units		
	Langelier Index @4C	0.15			
	Langelier Index @20C	0.55			
00-A024514	Sample Description: MW00-17d		Date & Time Sampled: 7 Sep-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London

Reported:11-Sep-2000

Page: 4

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: /1857

Purchase Order:
Date Received: 7-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024514	Sample Description: MW00-17d				Date & Time Sampled: 7-Sep-2000
	Barium Ba	0.07	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.37	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	121.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	33.0	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.03	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	145.	mg/L	0.5	
	Strontium Sr	0.30	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.03	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London

Reported:11-Sep-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	7-Sep-2000
Work Order:	71857	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024515	Sample Description: MW00-18S		Date & Time Sampled: 7-Sep-2000		
	pH Value	7.62	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.27	mg/L	0.05	
	Nitrate as N	2.14	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	2.14	mg/L	0.1	
	Carbon, Diss. Org. as C	< 0.5	mg/L	0.5	
	Phosphorus,Diss Orth as P	< 0.01	mg/L	0.01	
	Conductivity	622.	us/cm	1	
	Sulphate as SO4	52.	mg/L	2	
	Alkalinity CaCO3	328.	mg/L	1	
	Chloride as Cl	4.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	9.41	mg/L	0.02	
	Calculated Hardness CaCO3	381.	mg/L		
	Turbidity	12.0	NTU	0.1	
	Bicarbonate as HCO3	327.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	7.77	meq/L		
	Total Anions	7.91	meq/L		
	Ion Balance	0.87	% diff.		
	Calculated T.D.S.	405.	mg/L		
	Calculated Conductivity	715.	us/cm		
	Saturation pH @4C	7.39	pH units		
	Saturation pH @20C	6.99	pH units		
	Langelier Index @4C	0.23			
	Langelier Index @20C	0.63			
00-A024515	Sample Description: MW00-18S		Date & Time Sampled: 7-Sep-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:11-Sep-2000 Page: 6

Attention: MR. DAN BROWN
Client Reference: 001 3105
Work Order: 71857
Purchase Order:
Date Received: 7-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024515	Sample Description: MW00-18S				Date & Time Sampled: 7-Sep-2000
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	94.4	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	35.3	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.17	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	2.86	mg/L	0.5	
	Strontium Sr	1.05	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.12	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London

Reported:11-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71857

Purchase Order:
Date Received: 7-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024516	Sample Description: MW00-18D				Date & Time Sampled: 7-Sep-2000
	pH Value	7.60	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T Kjeldahl as N	0.19	mg/L	0.05	
	Nitrate as N	0.11	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	0.11	mg/L	0.1	
	Carbon. Diss. Org. as C	1.0	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	686.	us/cm	1	
	Sulphate as SO4	98.	mg/L	2	
	Alkalinity CaCO3	300.	mg/L	1	
	Chloride as Cl	9.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	11.0	mg/L	0.02	
	Calculated Hardness CaCO3	399.	mg/L		
	Turbidity	16.0	NTU	0.1	
	Bicarbonate as HCO3	299.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	8.53	meq/L		
	Total Anions	8.30	meq/L		
	Ion Balance	1.34	% diff.		
	Calculated T.D.S.	447.	mg/L		
	Calculated Conductivity	815.	us/cm		
	Saturation pH @4C	7.42	pH units		
	Saturation pH @20C	7.02	pH units		
	Langelier Index @4C	0.18			
	Langelier Index @20C	0.58			
00-A024516	Sample Description: MW00-18D				Date & Time Sampled: 7-Sep-2000
	Aluminum Al	0.38	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London
Reported:11-Sep-2000
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Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71857
Purchase Order:
Date Received: 7-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024516	Sample Description: MW00-18D				Date & Time Sampled: 7-Sep-2000
	Barium Ba	0.06	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.04	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	97.2	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.33	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	38.0	mg/L	0.02	
	Manganese Mn	0.03	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.84	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	11.5	mg/L	0.5	
	Strontium Sr	1.70	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.07	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London

Reported:11-Sep-2000

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Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	7-Sep-2000
Work Order:	71857	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024517	Sample Description: MW00-19S		Date & Time Sampled:	7-Sep-2000	
	pH Value	7.81	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	< 0.05	mg/L	0.05	
	Nitrate as N	0.20	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	0.20	mg/L	0.1	
	Carbon, Diss. Org. as C	1.2	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	676.	us/cm	1	
	Sulphate as SO_4	44.	mg/L	2	
	Alkalinity $CaCO_3$	295.	mg/L	1	
	Chloride as Cl	49.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO_2	9.81	mg/L	0.02	
	Calculated Hardness $CaCO_3$	337.	mg/L		
	Turbidity	20.0	NTU	0.1	
	Bicarbonate as HCO_3	293.	mg/L		
	Carbonate CO_3	2.	mg/L		
	Total Cation	8.08	meq/L		
	Total Anions	8.21	meq/L		
	Ion Balance	0.79	% diff.		
	Calculated T.D.S.	426.	mg/L		
	Calculated Conductivity	810.	us/cm		
	Saturation pH @4C	7.51	pH units		
	Saturation pH @20C	7.11	pH units		
	Langelier Index @4C	0.30			
	Langelier Index @20C	0.70			
00-A024517	Sample Description: MW00-19S		Date & Time Sampled:	7-Sep-2000	
	Aluminum Al	1.14	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London
Reported:11-Sep-2000
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Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71857
Purchase Order:
Date Received: 7-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024517	Sample Description: MW00-19S Date & Time Sampled: 7-Sep-2000				
	Barium Ba	0.05	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.05	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	81.0	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	0.86	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	32.6	mg/L	0.02	
	Manganese Mn	0.11	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.03	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	30.0	mg/L	0.5	
	Strontium Sr	0.49	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.05	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.21	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:11-Sep-2000 Page: 11

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	7-Sep-2000
Work Order:	71857	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024518	Sample Description: MW00-19D		Date & Time Sampled:	7-Sep-2000	
	pH Value	7.77	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.41	mg/L	0.05	
	Nitrate as N	< 0.1	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	< 0.1	mg/L	0.1	
	Carbon, Diss. Org. as C	1.5	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	678.	us/cm	1	
	Sulphate as SO4	44.	mg/L	2	
	Alkalinity CaCO3	292.	mg/L	1	
	Chloride as Cl	62.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	8.64	mg/L	0.02	
	Calculated Hardness CaCO3	327.	mg/L		
	Turbidity	8.88	NTU	0.1	
	Bicarbonate as HCO3	290.	mg/L		
	Carbonate CO3	2.	mg/L		
	Total Cation	7.95	meq/L		
	Total Anions	8.50	meq/L		
	Ion Balance	3.34	% diff.		
	Calculated T.D.S.	435.	mg/L		
	Calculated Conductivity	822.	us/cm		
	Saturation pH @4C	7.51	pH units		
	Saturation pH @20C	7.11	pH units		
	Langelier Index @4C	0.26			
	Langelier Index @20C	0.66			
00-A024518	Sample Description: MW00-19D		Date & Time Sampled:	7-Sep-2000	
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London
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Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	7-Sep-2000
Work Order:	71857	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024518	Sample Description: MW00-190	Date & Time Sampled: 7-Sep-2000			
	Barium Ba	0.05	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.03	mg/L	0.02	
	Cadmium Cd	0.002	mg/L	0.002	
	Calcium Ca	80.6	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	30.6	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.68	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	31.5	mg/L	0.5	
	Strontium Sr	0.66	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.05	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London

Reported:11-Sep-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	7-Sep-2000
Work Order:	71857	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024519	Sample Description: MW00-20S		Date & Time Sampled:	7-Sep-2000	
	pH Value	7.56	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.27	mg/L	0.05	
	Nitrate as N	6.76	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	6.76	mg/L	0.1	
	Carbon. Diss. Org. as C	1.1	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1260	us/cm	1	
	Sulphate as SO4	33.	mg/L	2	
	Alkalinity CaCO3	308.	mg/L	1	
	Chloride as Cl	235.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	8.15	mg/L	0.02	
	Calculated Hardness CaCO3	432.	mg/L		
	Turbidity	15.0	NTU	0.1	
	Bicarbonate as HCO3	307.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	13.64	meq/L		
	Total Anions	13.96	meq/L		
	Ion Balance	1.14	% diff.		
	Calculated T.D.S.	758.	mg/L		
	Calculated Conductivity	1519.	us/cm		
	Saturation pH @4C	7.36	pH units		
	Saturation pH @20C	6.96	pH units		
	Langelier Index @4C	0.20			
	Langelier Index @20C	0.60			
00-A024519	Sample Description: MW00-20S		Date & Time Sampled:	7-Sep-2000	
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London

Reported:11-Sep-2000

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Attention. MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71857

Purchase Order:
Date Received: 7-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024519	Sample Description: MW00-20S				Date & Time Sampled: 7-Sep-2000
	Barium Ba	0.09	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.03	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	116.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	34.5	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.81	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	113.	mg/L	0.5	
	Strontium Sr	0.53	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.03	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London
Reported:11-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71857
Purchase Order:
Date Received: 7-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024520	Sample Description: MW00-20D		Date & Time Sampled: 7-Sep-2000		
	pH Value	7.59	pH units	0.1	
	Ammonia as N	0.08	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.27	mg/L	0.05	
	Nitrate as N	7.04	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	7.04	mg/L	0.1	
	Carbon. Diss. Org. as C	0.9	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1290	us/cm	1	
	Sulphate as SO4	33.	mg/L	2	
	Alkalinity CaCO3	310.	mg/L	1	
	Chloride as Cl	250.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	7.47	mg/L	0.02	
	Calculated Hardness CaCO3	447.	mg/L		
	Turbidity	18.5	NTU	0.1	
	Bicarbonate as HCO3	309.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	14.34	meq/L		
	Total Anions	14.44	meq/L		
	Ion Balance	0.34	% diff.		
	Calculated T.D.S.	789.	mg/L		
	Calculated Conductivity	1592.	us/cm		
	Saturation pH @4C	7.34	pH units		
	Saturation pH @20C	6.94	pH units		
	Langelier Index @4C	0.25			
	Langelier Index @20C	0.65			
00-A024520	Sample Description: MW00-20D		Date & Time Sampled: 7-Sep-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London

Reported:11-Sep-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	7-Sep-2000
Work Order:	71857	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024520	Sample Description: MW00-20D				Date & Time Sampled: 7-Sep-2000
	Barium Ba	0.09	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	120.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	35.9	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.36	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	122.	mg/L	0.5	
	Strontium Sr	0.64	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London | Reported:11-Sep-2000 | Page: 17

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: /1857

Purchase Order:
Date Received: 7-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024521	Sample Description: MW00-21		Date & Time Sampled: 7-Sep-2000		
	pH Value	9.35	pH units	0.1	
	Ammonia as N	0.96	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	1.95	mg/L	0.05	
	Nitrate as N	0.23	mg/L	0.1	
	Nitrite as N	0.21	mg/L	0.02	
	Nitrate + Nitrite as N	0.44	mg/L	0.1	
	Carbon. Diss. Org. as C	10.9	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	943.	us/cm	1	
	Sulphate as SO4	110.	mg/L	2	
	Alkalinity CaCO3	105.	mg/L	1	
	Chloride as Cl	166.	mg/L	1	
	Colour	14.	TCU	5	
	Silica. Reactive as SiO2	17.7	mg/L	0.02	
	Calculated Hardness CaCO3	38.8	mg/L		
	Turbidity	20.0	NTU	0.1	
	Bicarbonate as HCO3	86.	mg/L		
	Carbonate CO3	18.	mg/L		
	Total Cation	9.49	meq/L		
	Total Anions	9.10	meq/L		
	Ion Balance	2.08	% diff.		
	Calculated T.D.S.	576.	mg/L		
	Calculated Conductivity	1134.	us/cm		
	Saturation pH @4C	9.01	pH units		
	Saturation pH @20C	8.61	pH units		
	Langelier Index @4C	0.34			
	Langelier Index @20C	0.74			
00-A024521	Sample Description: MW00-21		Date & Time Sampled: 7-Sep-2000		
	Aluminum Al	0.56	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London

Reported:11-Sep-2000

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Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71857

Purchase Order:
Date Received: 7-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024521	Sample Description: MW00-21	Date & Time Sampled: 7-Sep-2000			
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.15	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	7.30	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	0.49	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg.	5.00	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	0.07	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	11.4	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	192.	mg/L	0.5	
	Strontium Sr	0.07	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	0.04	mg/L	0.01	
	Zinc Zn	0.04	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London

Reported:11-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71857

Purchase Order:
Date Received: 7-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024522	Sample Description: MW00-22	Date & Time Sampled: 7-Sep-2000			
	pH Value	7.56	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.42	mg/L	0.05	
	Nitrate as N	0.57	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	0.57	mg/L	0.1	
	Carbon. Diss. Org. as C	3.2	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	657.	us/cm	1	
	Sulphate as SO4	40.	mg/L	2	
	Alkalinity CaCO3	405.	mg/L	1	
	Chloride as Cl	67.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	7.78	mg/L	0.02	
	Calculated Hardness CaCO3	381.	mg/L		
	Turbidity	17.1	NTU	0.1	
	Bicarbonate as HCO3	404.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	10.35	meq/L		
	Total Anions	10.86	meq/L		
	Ion Balance	2.44	% diff.		
	Calculated T.D.S.	559.	mg/L		
	Calculated Conductivity	1030.	us/cm		
	Saturation pH @4C	7.26	pH units		
	Saturation pH @20C	6.86	pH units		
	Langelier Index @4C	0.30			
	Langelier Index @20C	0.70			
00-A024522	Sample Description: MW00-22	Date & Time Sampled: 7-Sep-2000			
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London Reported:11-Sep-2000 Page: 20

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	7-Sep-2000
Work Order:	71857	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024522	Sample Description: MW00-22		Date & Time Sampled: 7-Sep-2000		
	Barium Ba	0.06	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	107.	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	27.6	mg/L	0.02	
	Manganese Mn	0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.32	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	61.5	mg/L	0.5	
	Strontium Sr	0.17	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.02	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

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Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:11-Sep-2000   Page: 21

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71857
Purchase Order:
Date Received: 7-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024523	Sample Description: Well 7				Date & Time Sampled: 6-Sep-2000 19:45
	pH Value	7.67	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.12	mg/L	0.05	
	Nitrate as N	4.53	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	4.53	mg/L	0.1	
	Carbon. Diss. Org. as C	0.9	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	719.	us/cm	1	
	Sulphate as SO4	49.	mg/L	2	
	Alkalinity CaCO3	305.	mg/L	1	
	Chloride as Cl	56.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	7.75	mg/L	0.02	
	Calculated Hardness CaCO3	371.	mg/L		
	Turbidity	0.24	NTU	0.1	
	Bicarbonate as HCO3	304.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	8.53	meq/L		
	Total Anions	9.02	meq/L		
	Ion Balance	2.81	% diff.		
	Calculated T.D.S.	470.	mg/L		
	Calculated Conductivity	860.	us/cm		
	Saturation pH @4C	7.42	pH units		
	Saturation pH @20C	7.02	pH units		
	Langelier Index @4C	0.25			
	Langelier Index @20C	0.65			
00-A024523	Sample Description: Well 7				Date & Time Sampled: 6-Sep-2000 19:45
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:11-Sep-2000 Page: 22

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71857
Purchase Order:
Date Received: 7-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A074523	Sample Description: Well 7				Date & Time Sampled: 6-Sep-2000 19:45
	Barium Ba	0.08	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	96.1	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	31.9	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.47	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	24.6	mg/L	0.5	
	Strontium Sr	2.53	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.09	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:11-Sep-2000 Page: 23

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	7-Sep-2000
Work Order:	71857	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024524	Sample Description: Well 6		Date & Time Sampled:	6-Sep-2000 19:45	
	pH Value	7.68	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.19	mg/L	0.05	
	Nitrate as N	1.20	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	1.20	mg/L	0.1	
	Carbon, Diss. Org. as C	< 0.5	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	718.	us/cm	1	
	Sulphate as SO4	169.	mg/L	2	
	Alkalinity CaCO3	255.	mg/L	1	
	Chloride as Cl	11.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.38	mg/L	0.02	
	Calculated Hardness CaCO3	424.	mg/L		
	Turbidity	< 0.1	NTU	0.1	
	Bicarbonate as HCO3	254.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	8.73	meq/L		
	Total Anions	9.01	meq/L		
	Ion Balance	1.56	% diff.		
	Calculated T.D.S.	502.	mg/L		
	Calculated Conductivity	911.	us/cm		
	Saturation pH @4C	7.41	pH units		
	Saturation pH @20C	7.01	pH units		
	Langelier Index @4C	0.27			
	Langelier Index @20C	0.67			
00-A024524	Sample Description: Well 6		Date & Time Sampled:	6-Sep-2000 19:45	
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:11-Sep-2000 Page: 24

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	7-Sep-2000
Work Order:	71857	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024574	Sample Description: Well 6		Date & Time Sampled: 6-Sep-2000 19:45		
	Barium Ba	0.10	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	118.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	31.5	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.04	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	5.21	mg/L	0.5	
	Strontium Sr	12.4	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.06	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London

Reported: 6-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649

Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023978	Sample Description: MW00-7D				Date & Time Sampled: 1-Sep-2000
	Barium Ba	0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	90.5	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	3.93	mg/L	0.02	
	Lead Pb	0.004	mg/L	0.001	
	Magnesium Mg	31.6	mg/L	0.02	
	Manganese Mn	0.05	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.05	mg/L	0.02	
	Potassium K	1.15	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	5.31	mg/L	0.5	
	Strontium Sr	0.20	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.07	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.12	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London　　Reported: 6-Sep-2000　　

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	1-Sep-2000
Work Order:	71649	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023979	Sample Description: MW00-8S		Date & Time Sampled:	1-Sep-2000	
	pH Value	7.73	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.26	mg/L	0.05	
	Nitrate as N	24.0	mg/L	0.1	
	Nitrite as N	0.05	mg/L	0.02	
	Nitrate + Nitrite as N	24.1	mg/L	0.1	
	Carbon. Diss. Org. as C	2.1	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	664.	us/cm	1	
	Sulphate as SO4	10.	mg/L	2	
	Alkalinity CaCO3	250.	mg/L	1	
	Chloride as Cl	12.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	6.67	mg/L	0.02	
	Calculated Hardness CaCO3	402.	mg/L		
	Turbidity	5.01	NTU	0.1	
	Bicarbonate as HCO3	249.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	8.24	meq/L		
	Total Anions	7.27	meq/L		
	Ion Balance	6.25	% diff.		
	Calculated T.D.S.	424.	mg/L		
	Calculated Conductivity	661.	us/cm		
	Saturation pH @4C	7.53	pH units		
	Saturation pH @20C	7.13	pH units		
	Langelier Index @4C	0.20			
	Langelier Index @20C	0.60			
00-A023979	Sample Description: MW00-8S		Date & Time Sampled:	1-Sep-2000	
	Aluminum Al	0.20	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London
Reported: 6-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649
Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023979	Sample Description: MW00-8S				Date & Time Sampled: 1-Sep-2000
	Barium Ba	0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.04	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	91.1	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.12	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	42.3	mg/L	0.02	
	Manganese Mn	0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.57	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	3.89	mg/L	0.5	
	Strontium Sr	0.18	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.06	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London
Reported: 6-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649
Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023980	Sample Description: MW00-8D		Date & Time Sampled:	1-Sep-2000	
	pH Value	7.71	pH units	0.1	
	Ammonia as N	0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.22	mg/L	0.05	
	Nitrate as N	6.32	mg/L	0.1	
	Nitrite as N	0.02	mg/L	0.02	
	Nitrate + Nitrite as N	6.34	mg/L	0.1	
	Carbon, Diss. Org. as C	1.0	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	558.	us/cm	1	
	Sulphate as SO4	22.	mg/L	2	
	Alkalinity CaCO3	265.	mg/L	1	
	Chloride as Cl	8.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.94	mg/L	0.02	
	Calculated Hardness CaCO3	349.	mg/L		
	Turbidity	1.51	NTU	0.1	
	Bicarbonate as HCO3	264.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	7.30	meq/L		
	Total Anions	6.44	meq/L		
	Ion Balance	6.28	% diff.		
	Calculated T.D.S.	353.	mg/L		
	Calculated Conductivity	617.	us/cm		
	Saturation pH @4C	7.51	pH units		
	Saturation pH @20C	7.11	pH units		
	Langelier Index @4C	0.20			
	Langelier Index @20C	0.60			
00-A023980	Sample Description: MW00-8D		Date & Time Sampled:	1-Sep-2000	
	Aluminum Al	0.23	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London — Reported: 6-Sep-2000 — Page: 28

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	1-Sep-2000
Work Order:	71649	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023980	Sample Description: MW00-8D				Date & Time Sampled: 1-Sep-2000
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.03	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	88.8	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.33	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	31.0	mg/L	0.02	
	Manganese Mn	0.04	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.78	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	6.12	mg/L	0.5	
	Strontium Sr	0.20	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.09	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 6-Sep-2000 Page: 29

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649
Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023981	Sample Description: MW00-9S				Date & Time Sampled: 1-Sep-2000
	pH Value	7.79	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.30	mg/L	0.05	
	Nitrate as N	< 0.1	mg/L	0.1	
	Nitrite as N	0.04	mg/L	0.02	
	Nitrate + Nitrite as N	< 0.1	mg/L	0.1	
	Carbon, Diss. Org. as C	2.5	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1540	us/cm	1	
	Sulphate as SO4	626.	mg/L	2	
	Alkalinity CaCO3	359.	mg/L	1	
	Chloride as Cl	53.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	16.0	mg/L	0.02	
	Calculated Hardness CaCO3	1010	mg/L		
	Turbidity	6.55	NTU	0.1	
	Bicarbonate as HCO3	357.	mg/L		
	Carbonate CO3	2.	mg/L		
	Total Cation	23.43	meq/L		
	Total Anions	21.70	meq/L		
	Ion Balance	3.85	% diff.		
	Calculated T.D.S.	1322.	mg/L		
	Calculated Conductivity	2494.	us/cm		
	Saturation pH @4C	7.05	pH units		
	Saturation pH @20C	6.65	pH units		
	Langelier Index @4C	0.74			
	Langelier Index @20C	1.14			
00-A023981	Sample Description: MW00-9S				Date & Time Sampled: 1-Sep-2000
	Aluminum Al	0.14	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 6-Sep-2000

Attention: MR. DAN BROWN   Purchase Order:
Client Reference: 001-3105   Date Received: 1-Sep-2000
Work Order: 71649   Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023981	Sample Description: MW00-9S				Date & Time Sampled: 1-Sep-2000
	Barium Ba	0.09	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.25	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	217.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.12	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	114.	mg/L	0.02	
	Manganese Mn	0.22	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	13.4	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	66.2	mg/L	0.5	
	Strontium Sr	3.21	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	< 0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London　　Reported: 6-Sep-2000　　Page: 31

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649

Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023982	Sample Description: MW00-9D		Date & Time Sampled: 1-Sep-2000		
	pH Value	7.41	pH units	0.1	
	Ammonia as N	0.06	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.36	mg/L	0.05	
	Nitrate as N	< 0.1	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	< 0.1	mg/L	0.1	
	Carbon, Diss. Org. as C	< 0.5	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	2000	us/cm	1	
	Sulphate as SO4	1440	mg/L	2	
	Alkalinity CaCO3	181.	mg/L	1	
	Chloride as Cl	3.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	8.53	mg/L	0.02	
	Calculated Hardness CaCO3	2190	mg/L		
	Turbidity	2.32	NTU	0.1	
	Bicarbonate as HCO3	181.	mg/L		
	Carbonate CO3	0.	mg/L		
	Total Cation	44.25	meq/L		
	Total Anions	33.66	meq/L		
	Ion Balance	13.6	% diff.		
	Calculated T.D.S.	2411.	mg/L		
	Calculated Conductivity	4662.	us/cm		
	Saturation pH @4C	6.84	pH units		
	Saturation pH @20C	6.44	pH units		
	Langelier Index @4C	0.57			
	Langelier Index @20C	0.97			
00-A023982	Sample Description: MW00-9D		Date & Time Sampled: 1-Sep-2000		
	Aluminum Al	2.51	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 6-Sep-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	1-Sep-2000
Work Order:	71649	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023982	Sample Description: MW00-9D				Date & Time Sampled: 1-Sep-2000
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.31	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	778.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	2.73	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	59.9	mg/L	0.02	
	Manganese Mn	0.09	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.02	mg/L	0.02	
	Potassium K	4.09	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	8.85	mg/L	0.5	
	Strontium Sr	13.0	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.03	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.04	mg/L	0.01	

NOTE: The ion balance test is suitable for potable water.

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 6-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649
Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023983	Sample Description: MW00-10S		Date & Time Sampled:	1-Sep-2000	
	pH Value	7.53	pH units	0.1	
	Ammonia as N	0.27	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.28	mg/L	0.05	
	Nitrate as N	2.11	mg/L	0.1	
	Nitrite as N	0.03	mg/L	0.02	
	Nitrate + Nitrite as N	2.14	mg/L	0.1	
	Carbon, Diss. Org. as C	2.6	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1040	us/cm	1	
	Sulphate as SO4	222.	mg/L	2	
	Alkalinity CaCO3	400.	mg/L	1	
	Chloride as Cl	10.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	13.0	mg/L	0.02	
	Calculated Hardness CaCO3	738.	mg/L		
	Turbidity	8.85	NTU	0.1	
	Bicarbonate as HCO3	399.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	15.45	meq/L		
	Total Anions	13.05	meq/L		
	Ion Balance	8.41	% diff.		
	Calculated T.D.S.	779.	mg/L		
	Calculated Conductivity	1436.	us/cm		
	Saturation pH @4C	6.96	pH units		
	Saturation pH @20C	6.56	pH units		
	Langelier Index @4C	0.57			
	Langelier Index @20C	0.97			
00-A023983	Sample Description: MW00-10S		Date & Time Sampled:	1-Sep-2000	
	Aluminum Al	0.31	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 6-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649
Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023983	Sample Description: MW00-10S				Date & Time Sampled: 1-Sep-2000
	Barium Ba	0.07	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.07	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	224.	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.29	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	43.5	mg/L	0.02	
	Manganese Mn	0.10	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	4.00	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	13.1	mg/L	0.5	
	Strontium Sr	2.38	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.11	mg/L	0.01	

NOTE: The ion balance test is suitable for potable water.

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 6-Sep-2000   Page: 35

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649
Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023984	Sample Description: MW00-10D		Date & Time Sampled: 1-Sep-2000		
	pH Value	9.11	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.10	mg/L	0.05	
	Nitrate as N	1.93	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	1.93	mg/L	0.1	
	Carbon, Diss. Org. as C	0.7	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1300	us/cm	1	
	Sulphate as SO4	800.	mg/L	2	
	Alkalinity CaCO3	16.	mg/L	1	
	Chloride as Cl	8.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	8.72	mg/L	0.02	
	Calculated Hardness CaCO3	951.	mg/L		
	Turbidity	7.00	NTU	0.1	
	Bicarbonate as HCO3	14.	mg/L		
	Carbonate CO3	2.	mg/L		
	Total Cation	19.50	meq/L		
	Total Anions	17.32	meq/L		
	Ion Balance	5.90	% diff.		
	Calculated T.D.S.	1202.	mg/L		
	Calculated Conductivity	2393.	us/cm		
	Saturation pH @4C	8.24	pH units		
	Saturation pH @20C	7.84	pH units		
	Langelier Index @4C	0.87			
	Langelier Index @20C	1.27			
00-A023984	Sample Description: MW00-10D		Date & Time Sampled: 1-Sep-2000		
	Aluminum Al	13.4	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London | Reported: 6-Sep-2000 |

Attention: MR. DAN BROWN

Client Reference: 001-3105

Work Order: 71649

Purchase Order:

Date Received: 1-Sep-2000

Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023984	Sample Description: MW00-10D				Date & Time Sampled: 1-Sep-2000
	Barium Ba	1.15	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.10	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	309.	mg/L	0.05	
	Chromium Cr	0.02	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.02	mg/L	0.01	
	Iron Fe	12.7	mg/L	0.02	
	Lead Pb	0.018	mg/L	0.001	
	Magnesium Mg	43.5	mg/L	0.02	
	Manganese Mn	0.41	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.51	mg/L	0.02	
	Potassium K	6.71	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	7.46	mg/L	0.5	
	Strontium Sr	9.56	mg/L	0.02	
	Tin Sn	0.07	mg/L	0.07	
	Titanium Ti	0.38	mg/L	0.02	
	Vanadium V	0.03	mg/L	0.01	
	Zinc Zn	0.15	mg/L	0.01	

NOTE: The nitric acid preserved sample was noted to contain sediment. The positive lead result is due to the sediment being included in the digestion. The supernatant of the nitric acid sample was analyzed and found to contain < 0.001 mg/L Pb. The analysis of the unpreserved sample was also found to be <0.001 mg/L. ds 06sep00

EXPLANATION OF CODES

EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 6-Sep-2000 Page: 37

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	1-Sep-2000
Work Order:	71649	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023985	Sample Description: MW00-11S		Date & Time Sampled: 1-Sep-2000		
	pH Value	7.36	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.67	mg/L	0.05	
	Nitrate as N	7.15	mg/L	0.1	
	Nitrite as N	0.39	mg/L	0.02	
	Nitrate + Nitrite as N	7.54	mg/L	0.1	
	Carbon, Diss. Org. as C	1.9	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	500.	us/cm	1	
	Sulphate as SO4	22.	mg/L	2	
	Alkalinity CaCO3	199.	mg/L	1	
	Chloride as Cl	11.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	12.6	mg/L	0.02	
	Calculated Hardness CaCO3	244.	mg/L		
	Turbidity	8.72	NTU	0.1	
	Bicarbonate as HCO3	199.	mg/L		
	Carbonate CO3	0.	mg/L		
	Total Cation	6.10	meq/L		
	Total Anions	5.29	meq/L		
	Ion Balance	7.17	% diff.		
	Calculated T.D.S.	311.	mg/L		
	Calculated Conductivity	516.	us/cm		
	Saturation pH @4C	7.79	pH units		
	Saturation pH @20C	7.39	pH units		
	Langelier Index @4C	-0.43			
	Langelier Index @20C	-0.03			
00-A023985	Sample Description: MW00-11S		Date & Time Sampled: 1-Sep-2000		
	Aluminum Al	0.63	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London

Reported: 6-Sep-2000

Page: 38

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649

Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023985	Sample Description: MW00-11S		Date & Time Sampled: 1-Sep-2000		
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.03	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	60.1	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.47	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	22.8	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	4.63	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	25.5	mg/L	0.5	
	Strontium Sr	0.27	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.04	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 6-Sep-2000   Page: 39

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	1-Sep-2000
Work Order:	71649	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023986	Sample Description: MW00-11D		Date & Time Sampled:	1-Sep-2000	
	pH Value	7.72	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.19	mg/L	0.05	
	Nitrate as N	3.37	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	3.37	mg/L	0.1	
	Carbon, Diss. Org. as C	0.8	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	581.	us/cm	1	
	Sulphate as SO4	25.	mg/L	2	
	Alkalinity CaCO3	274.	mg/L	1	
	Chloride as Cl	18.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.85	mg/L	0.02	
	Calculated Hardness CaCO3	361.	mg/L		
	Turbidity	2.90	NTU	0.1	
	Bicarbonate as HCO3	273.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	7.82	meq/L		
	Total Anions	6.75	meq/L		
	Ion Balance	7.33	% diff.		
	Calculated T.D.S.	369.	mg/L		
	Calculated Conductivity	674.	us/cm		
	Saturation pH @4C	7.48	pH units		
	Saturation pH @20C	7.08	pH units		
	Langelier Index @4C	0.24			
	Langelier Index @20C	0.64			
00-A023986	Sample Description: MW00-11D		Date & Time Sampled:	1-Sep-2000	
	Aluminum Al	0.29	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 6-Sep-2000   Page: 40

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	1-Sep-2000
Work Order:	71649	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023986	Sample Description: MW00-11D		Date & Time Sampled: 1-Sep-2000		
	Barium Ba	0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	92.3	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.19	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	31.7	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.94	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	12.1	mg/L	0.5	
	Strontium Sr	1.29	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.12	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 6-Sep-2000   Page: 41

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	1-Sep-2000
Work Order:	71649	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023987	Sample Description: MW00-12D		Date & Time Sampled:	1-Sep-2000	
	pH Value	7.07	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	3.46	mg/L	0.05	
	Nitrate as N	8.50	mg/L	0.1	
	Nitrite as N	0.03	mg/L	0.02	
	Nitrate + Nitrite as N	8.53	mg/L	0.1	
	Carbon. Diss. Org. as C	12.8	mg/L	0.5	
	Phosphorus.Diss.Orth as P	0.07	mg/L	0.01	
	Conductivity	1240	us/cm	1	
	Sulphate as SO4	31.	mg/L	2	
	Alkalinity CaCO3	548.	mg/L	1	
	Chloride as Cl	68.	mg/L	1	
	Colour	60.	TCU	5	
	Silica. Reactive as SiO2	8.87	mg/L	0.02	
	Calculated Hardness CaCO3	595.	mg/L		
	Turbidity	8.20	NTU	0.1	
	Bicarbonate as HCO3	547.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	15.69	meq/L		
	Total Anions	14.13	meq/L		
	Ion Balance	5.22	% diff.		
	Calculated T.D.S.	814.	mg/L		
	Calculated Conductivity	1259.	us/cm		
	Saturation pH @4C	6.98	pH units		
	Saturation pH @20C	6.58	pH units		
	Langelier Index @4C	0.09			
	Langelier Index @20C	0.49			
00-A023987	Sample Description: MW00-12D		Date & Time Sampled:	1-Sep-2000	
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 6-Sep-2000 Page: 42

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	1-Sep-2000
Work Order:	71649	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023987	Sample Description: MW00-12D		Date & Time Sampled:	1-Sep-2000	
	Barium Ba	0.07	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.07	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	158.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	0.04	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	48.8	mg/L	0.02	
	Manganese Mn	0.24	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.20	mg/L	0.02	
	Potassium K	110.	mg/L	0.2	
	Silver Ag	0.01	mg/L	0.01	
	Sodium Na	22.3	mg/L	0.5	
	Strontium Sr	0.50	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.09	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 6-Sep-2000   Page: 43

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	1-Sep-2000
Work Order:	71649	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023988	Sample Description: Well 5		Date & Time Sampled: 1-Sep-2000 8:45		
	pH Value	7.67	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.17	mg/L	0.05	
	Nitrate as N	6.64	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	6.64	mg/L	0.1	
	Carbon. Diss. Org. as C	0.6	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	640.	us/cm	1	
	Sulphate as SO4	27.	mg/L	2	
	Alkalinity CaCO3	271.	mg/L	1	
	Chloride as Cl	27.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	7.60	mg/L	0.02	
	Calculated Hardness CaCO3	374.	mg/L		
	Turbidity	0.19	NTU	0.1	
	Bicarbonate as HCO3	270.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	8.27	meq/L		
	Total Anions	7.22	meq/L		
	Ion Balance	6.77	% diff.		
	Calculated T.D.S.	402.	mg/L		
	Calculated Conductivity	721.	us/cm		
	Saturation pH @4C	7.46	pH units		
	Saturation pH @20C	7.06	pH units		
	Langelier Index @4C	0.21			
	Langelier Index @20C	0.61			
00-A023988	Sample Description: Well 5		Date & Time Sampled: 1-Sep-2000 8:45		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 6-Sep-2000   Page: 44

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649
Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023988	Sample Description: Well 5		Date & Time Sampled: 1-Sep-2000 8:45		
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	97.8	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	31.5	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.59	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	17.3	mg/L	0.5	
	Strontium Sr	0.31	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.04	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London

Reported: 6-Sep-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	1-Sep-2000
Work Order:	71649	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023989	Sample Description: Dup-S		Date & Time Sampled: 1-Sep-2000		
	pH Value	7.42	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.22	mg/L	0.05	
	Nitrate as N	4.22	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	4.22	mg/L	0.1	
	Carbon, Diss. Org. as C	2.0	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	746.	us/cm	1	
	Sulphate as SO4	13.	mg/L	2	
	Alkalinity CaCO3	370.	mg/L	1	
	Chloride as Cl	28.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	10.2	mg/L	0.02	
	Calculated Hardness CaCO3	446.	mg/L		
	Turbidity	2.95	NTU	0.1	
	Bicarbonate as HCO3	369.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	9.95	meq/L		
	Total Anions	8.76	meq/L		
	Ion Balance	6.36	% diff.		
	Calculated T.D.S.	470.	mg/L		
	Calculated Conductivity	855.	us/cm		
	Saturation pH @4C	7.27	pH units		
	Saturation pH @20C	6.87	pH units		
	Langelier Index @4C	0.15			
	Langelier Index @20C	0.55			
00-A023989	Sample Description: Dup-S		Date & Time Sampled: 1-Sep-2000		
	Aluminum Al	0.43	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 6-Sep-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	1-Sep-2000
Work Order:	71649	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023989	Sample Description: Dup-S	Date & Time Sampled: 1-Sep-2000			
	Barium Ba	0.05	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	113.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.37	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	39.7	mg/L	0.02	
	Manganese Mn	0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.48	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	22.0	mg/L	0.5	
	Strontium Sr	0.28	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.09	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London
Reported: 6-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649
Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023990	Sample Description: Dup-D		Date & Time Sampled: 1-Sep-2000		
	pH Value	7.63	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.19	mg/L	0.05	
	Nitrate as N	7.31	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	7.31	mg/L	0.1	
	Carbon. Diss. Org. as C	0.9	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	660.	us/cm	1	
	Sulphate as SO4	10.	mg/L	2	
	Alkalinity CaCO3	266.	mg/L	1	
	Chloride as Cl	34.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.16	mg/L	0.02	
	Calculated Hardness CaCO3	368.	mg/L		
	Turbidity	5.06	NTU	0.1	
	Bicarbonate as HCO3	267.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	8.45	meq/L		
	Total Anions	7.05	meq/L		
	Ion Balance	9.05	% diff.		
	Calculated T.D.S.	397.	mg/L		
	Calculated Conductivity	721.	us/cm		
	Saturation pH @4C	7.48	pH units		
	Saturation pH @20C	7.08	pH units		
	Langelier Index @4C	0.15			
	Langelier Index @20C	0.55			
00-A023990	Sample Description: Dup-D		Date & Time Sampled: 1-Sep-2000		
	Aluminum Al	0.20	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London	Reported: 6-Sep-2000	Page: 48

Attention: MR. DAN BROWN
Purchase Order:
Client Reference: 001-3105
Date Received: 1-Sep-2000
Work Order: 71649
Sample Type: Liquid

00-A023990 Sample Description: Dup-D	Date & Time Sampled: 1-Sep-2000

Sample #	Test	Result	Units	EQL	Comment
00-A023990	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	94.5	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.34	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	32.0	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.11	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	24.1	mg/L	0.5	
	Strontium Sr	0.19	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.14	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 6-Sep-2000

Attention: MR. DAN BROWN	Purchase Order:
Client Reference: 001-3105	Date Received: 1-Sep-2000
Work Order: 71649	Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023991	Sample Description: MW00-6D		Date & Time Sampled: 1-Sep-2000		
	pH Value	7.70	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.20	mg/L	0.05	
	Nitrate as N	7.44	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	7.44	mg/L	0.1	
	Carbon, Diss. Org. as C	0.6	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	663.	us/cm	1	
	Sulphate as SO4	11.	mg/L	2	
	Alkalinity CaCO3	261.	mg/L	1	
	Chloride as Cl	43.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	6.92	mg/L	0.02	
	Calculated Hardness CaCO3	368.	mg/L		
	Turbidity	2.17	NTU	0.1	
	Bicarbonate as HCO3	260.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	8.51	meq/L		
	Total Anions	7.19	meq/L		
	Ion Balance	8.36	% diff.		
	Calculated T.D.S.	404.	mg/L		
	Calculated Conductivity	741.	us/cm		
	Saturation pH @4C	7.49	pH units		
	Saturation pH @20C	7.09	pH units		
	Langelier Index @4C	0.21			
	Langelier Index @20C	0.61			
00-A023991	Sample Description: MW00-6D		Date & Time Sampled: 1-Sep-2000		
	Aluminum Al	0.16	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 6-Sep-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	1-Sep-2000
Work Order:	71649	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023991	Sample Description: MW00-6D				Date & Time Sampled: 1-Sep-2000
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	94.7	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.24	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	32.0	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.12	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	25.1	mg/L	0.5	
	Strontium Sr	0.20	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.11	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

PSC
PHILIP SERVICES

CERTIFICATE OF ANALYSIS

GOLDER ASSOCIATES
SEP - 6 2000
RECEIVED — LONDON

Attention: MR. DAN BROWN
Client Name: Golder Associates Ltd. (London)
Address: 500 Nottinghill Road
London. ON
N6K 3P1
Telephone: 519-471-9600
FAX: 519-471-4707

Laboratory Work Order: 71706

This Certificate of Analysis is for the following:

Sample(s) Received on: 5-Sep-2000
Reported on: 6-Sep-2000
Client Reference: 001-3105
Purchase Order:
Quotation No.:

Certificate of Quality Control enclosed
Hold Time Report enclosed

Results for solid samples are corrected for moisture and reported as dry weight.

Test procedures used are performance based methods referenced from "Standard Methods for the Examination of Water and Wastewater". MOEE. EPA. NIOSH or other published references.

Water samples are discarded 4 weeks after the results have been reported. Solid samples are retained for 3 months. Storage for longer periods requires prior arrangement with the laboratory.

Reviewed by

Darlene Hoogenes or Kathie Hughes
Service Representative

Roger Rioux

Authorized by

Roger Rioux or Lorraine DaSilva
General Manager QA Scientist

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London

Reported: 6-Sep-2000

Page: 1

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	5-Sep-2000
Work Order:	71706	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024057	Sample Description: Well 6 1 min.				Date & Time Sampled: 4-Sep-2000
	Turbidity	8.21	NTU	0.1	
00-A024058	Sample Description: Well 6 4 min.				Date & Time Sampled: 4-Sep-2000
	Turbidity	4.23	NTU	0.1	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London   Reported: 6-Sep-2000   Page: 1

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	5-Sep-2000
Work Order:	71706	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024059	Sample Description: Well 6 Sept. 4 20:20		Date & Time Sampled: 4-Sep-2000		
	pH Value	7.48	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.06	mg/L	0.05	
	Nitrate as N	3.77	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	3.77	mg/L	0.1	
	Carbon. Diss. Org. as C	0.8	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	698.	us/cm	1	
	Sulphate as SO4	45.	mg/L	2	
	Alkalinity CaCO3	280.	mg/L	1	
	Chloride as Cl	41.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	6.98	mg/L	0.02	
	Calculated Hardness CaCO3	388.	mg/L		
	Turbidity	1.00	NTU	0.1	
	Bicarbonate as HCO3	279.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	8.59	meq/L		
	Total Anions	7.96	meq/L		
	Ion Balance	3.81	% diff.		
	Calculated T.D.S.	431.	mg/L		
	Calculated Conductivity	801.	us/cm		
	Saturation pH @4C	7.44	pH units		
	Saturation pH @20C	7.04	pH units		
	Langelier Index @4C	0.04			
	Langelier Index @20C	0.44			
00-A024059	Sample Description: Well 6 Sept. 4 20:20		Date & Time Sampled: 4-Sep-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 6-Sep-2000 Page: 2

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	5-Sep-2000
Work Order:	71706	Sample Type:	Liquid

00-A024059 Sample Description: Well 6 Sept. 4 20:20 Date & Time Sampled: 4-Sep-2000

Sample #	Test	Result	Units	EQL	Comment
00-A024059	Barium Ba	0.09	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	99.2	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	0.04	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	34.0	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.35	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	18.6	mg/L	0.5	
	Strontium Sr	2.64	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.11	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 6-Sep-2000 Page: 3

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71706
Purchase Order:
Date Received: 5-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A024060	Sample Description: Well 7 Sept. 5 08:20		Date & Time Sampled: 5-Sep-2000		
	pH Value	7.59	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	< 0.05	mg/L	0.05	
	Nitrate as N	0.51	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	0.51	mg/L	0.1	
	Carbon. Diss. Org. as C	< 0.5	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	666.	us/cm	1	
	Sulphate as SO4	116.	mg/L	2	
	Alkalinity CaCO3	247.	mg/L	1	
	Chloride as Cl	10.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	6.44	mg/L	0.02	
	Calculated Hardness CaCO3	400.	mg/L		
	Turbidity	0.12	NTU	0.1	
	Bicarbonate as HCO3	246.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	8.22	meq/L		
	Total Anions	7.67	meq/L		
	Ion Balance	3.46	% diff.		
	Calculated T.D.S.	428.	mg/L		
	Calculated Conductivity	793.	us/cm		
	Saturation pH @4C	7.46	pH units		
	Saturation pH @20C	7.06	pH units		
	Langelier Index @4C	0.13			
	Langelier Index @20C	0.53			
00-A024060	Sample Description: Well 7 Sept. 5 08:20		Date & Time Sampled: 5-Sep-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 6-Sep-2000 Page: 4

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	5-Sep-2000
Work Order:	71706	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
OD-A024060	Sample Description: Well 7 Sept. 5 08:20		Date & Time Sampled: 5-Sep-2000		
	Barium Ba	0.12	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	107.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	32.2	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	0.90	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	4.80	mg/L	0.5	
	Strontium Sr	12.9	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.05	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Attention: MR. DAN BROWN
Client Name: Golder Associates Ltd. (London)
Address: 500 Nottinghill Road
London, ON
N6K 3P1
Telephone: 519-471-9600
FAX: 519-471-4707

Laboratory Work Order: 71649

This Certificate of Analysis is for the following:

Sample(s) Received on: 1-Sep-2000 Reported on: 6-Sep-2000
Client Reference: 001-3106
Purchase Order:
Quotation No.:

Results for solid samples are corrected for moisture and reported as dry weight.

Test procedures used are performance based methods referenced from "Standard Methods for the Examination of Water and Wastewater", MOEE, EPA, NIOSH or other published references.

Water samples are discarded 4 weeks after the results have been reported. Solid samples are retained for 3 months. Storage for longer periods requires prior arrangement with the laboratory.

ELECTRONICALLY AUTHORIZED
Signatures to follow on original report.

Reviewed by	Authorized by		
Darlene Hoogenes or Kathie Hughes	Roger Rioux	or	Lorraine DaSilva
Service Representative	Lab Manager		QA Officer

Philip Services Corporation

CASE NARRATIVE

Attention: MR. DAN BROWN
Client Name: Golder Associates Ltd. (London)
Address: 500 Nottinghill Road
London, ON
N6K 3P1
Telephone: 519-471-9600
FAX: 519-471-4707

Laboratory Work Order: 71649

Sample(s) Received on: 1-Sep-2000 Reported on: 6-Sep-2000

Sample Shipment Receipt and Login:

No exceptions were noted.

Sample Analysis:

No exceptions were noted during analysis.

General Comments:

None.

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London
Reported: 6-Sep-2000
Page: 1

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649
Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023967	Sample Description: MW00-1s		Date & Time Sampled: 1-Sep-2000		
	pH Value	7.57	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.31	mg/L	0.05	
	Nitrate as N	5.98	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	5.98	mg/L	0.1	
	Carbon, Diss. Org. as C	1.7	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	700.	us/cm	1	
	Sulphate as SO4	12.	mg/L	2	
	Alkalinity CaCO3	324.	mg/L	1	
	Chloride as Cl	34.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	8.90	mg/L	0.02	
	Calculated Hardness CaCO3	396.	mg/L		
	Turbidity	9.22	NTU	0.1	
	Bicarbonate as HCO3	323.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	9.12	meq/L		
	Total Anions	8.12	meq/L		
	Ion Balance	5.85	% diff.		
	Calculated T.D.S.	440.	mg/L		
	Calculated Conductivity	796.	us/cm		
	Saturation pH @4C	7.38	pH units		
	Saturation pH @20C	6.98	pH units		
	Langelier Index @4C	0.19			
	Langelier Index @20C	0.59			
00-A023967	Sample Description: MW00-1s		Date & Time Sampled: 1-Sep-2000		
	Aluminum Al	0.53	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London

Reported: 6-Sep-2000

Attention: MR. DAN BROWN	Purchase Order:
Client Reference: 001-3105	Date Received: 1-Sep-2000
Work Order: 71649	Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023967	Sample Description: MW00-1s				Date & Time Sampled: 1-Sep-2000
	Barium Ba	0.06	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.04	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	98.2	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.44	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	36.6	mg/L	0.02	
	Manganese Mn	0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.31	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	25.9	mg/L	0.5	
	Strontium Sr	0.31	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	< 0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London　Reported: 6-Sep-2000　Page: 3

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649
Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023968	Sample Description: MW00-1D		Date & Time Sampled: 1-Sep-2000		
	pH Value	7.61	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.30	mg/L	0.05	
	Nitrate as N	7.57	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	7.57	mg/L	0.1	
	Carbon, Diss. Org. as C	0.8	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	579.	us/cm	1	
	Sulphate as SO4	12.	mg/L	2	
	Alkalinity CaCO3	267.	mg/L	1	
	Chloride as Cl	21.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.38	mg/L	0.02	
	Calculated Hardness CaCO3	351.	mg/L		
	Turbidity	1.71	NTU	0.1	
	Bicarbonate as HCO3	266.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	7.61	meq/L		
	Total Anions	6.72	meq/L		
	Ion Balance	6.18	% diff.		
	Calculated T.D.S.	368.	mg/L		
	Calculated Conductivity	653.	us/cm		
	Saturation pH @4C	7.51	pH units		
	Saturation pH @20C	7.11	pH units		
	Langelier Index @4C	0.10			
	Langelier Index @20C	0.50			
00-A023968	Sample Description: MW00-1D		Date & Time Sampled: 1-Sep-2000		
	Aluminum Al	0.26	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London	Reported: 6-Sep-2000	

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	1-Sep-2000
Work Order:	71649	Sample Type:	Liquid

00-A023968 Sample Description: MW00-1D Date & Time Sampled: 1-Sep-2000

Sample #	Test	Result	Units	EQL	Comment
00-A023968	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.04	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	87.8	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	1.06	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	32.0	mg/L	0.02	
	Manganese Mn	0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.07	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	12.4	mg/L	0.5	
	Strontium Sr	0.15	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.14	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London

Reported: 6-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649
Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023969	Sample Description: MW00-2S		Date & Time Sampled: 1-Sep-2000		
	pH Value	7.66	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.43	mg/L	0.05	
	Nitrate as N	6.27	mg/L	0.1	
	Nitrite as N	0.09	mg/L	0.02	
	Nitrate + Nitrite as N	6.36	mg/L	0.1	
	Carbon, Diss. Org. as C	2.2	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	752.	us/cm	1	
	Sulphate as SO4	21.	mg/L	2	
	Alkalinity CaCO3	315.	mg/L	1	
	Chloride as Cl	50.	mg/L	1	
	Colour	8.	TCU	5	
	Silica, Reactive as SiO2	8.72	mg/L	0.02	
	Calculated Hardness CaCO3	371.	mg/L		
	Turbidity	3.90	NTU	0.1	
	Bicarbonate as HCO3	314.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	9.56	meq/L		
	Total Anions	8.60	meq/L		
	Ion Balance	5.29	% diff.		
	Calculated T.D.S.	479.	mg/L		
	Calculated Conductivity	852.	us/cm		
	Saturation pH @4C	7.43	pH units		
	Saturation pH @20C	7.03	pH units		
	Langelier Index @4C	0.23			
	Langelier Index @20C	0.63			
00-A023969	Sample Description: MW00-2S		Date & Time Sampled: 1-Sep-2000		
	Aluminum Al	1.01	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 6-Sep-2000   Page: 6

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649
Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023969	Sample Description: MW00-2S				Date & Time Sampled: 1-Sep-2000
	Barium Ba	0.10	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.05	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	90.7	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.77	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	35.2	mg/L	0.02	
	Manganese Mn	0.03	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	16.6	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	39.4	mg/L	0.5	
	Strontium Sr	0.39	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.05	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.39	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 6-Sep-2000 Page: 7

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	1-Sep-2000
Work Order:	71649	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023970	Sample Description: MW00-2D		Date & Time Sampled:	1-Sep-2000	
	pH Value	7.44	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.69	mg/L	0.05	
	Nitrate as N	5.56	mg/L	0.1	
	Nitrite as N	0.25	mg/L	0.02	
	Nitrate + Nitrite as N	5.81	mg/L	0.1	
	Carbon, Diss. Org. as C	3.3	mg/L	0.5	
	Phosphorus,Diss.Orth as P	0.01	mg/L	0.01	
	Conductivity	810.	us/cm	1	
	Sulphate as SO4	26.	mg/L	2	
	Alkalinity CaCO3	298.	mg/L	1	
	Chloride as Cl	71.	mg/L	1	
	Colour	12.	TCU	5	
	Silica, Reactive as SiO2	9.12	mg/L	0.02	
	Calculated Hardness CaCO3	370.	mg/L		
	Turbidity	11.2	NTU	0.1	
	Bicarbonate as HCO3	297.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	9.84	meq/L		
	Total Anions	8.92	meq/L		
	Ion Balance	4.90	% diff.		
	Calculated T.D.S.	504.	mg/L		
	Calculated Conductivity	895.	us/cm		
	Saturation pH @4C	7.45	pH units		
	Saturation pH @20C	7.05	pH units		
	Langelier Index @4C	-0.01			
	Langelier Index @20C	0.39			
00-A023970	Sample Description: MW00-2D		Date & Time Sampled:	1-Sep-2000	
	Aluminum Al	0.82	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 6-Sep-2000   Page: 8

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	1-Sep-2000
Work Order:	71649	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023970	Sample Description: MW00-2D		Date & Time Sampled: 1-Sep-2000		
	Barium Ba	0.06	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.05	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	92.3	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.69	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	34.0	mg/L	0.02	
	Manganese Mn	0.07	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.04	mg/L	0.02	
	Potassium K	26.9	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	40.1	mg/L	0.5	
	Strontium Sr	0.47	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.03	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.05	mg/L	0.01	

EXPLANATION OF CODES

EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 6-Sep-2000   Page: 9

Attention: MR. DAN BROWN   Purchase Order:
Client Reference: 001-3105   Date Received: 1-Sep-2000
Work Order: 71649   Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023971	Sample Description: MW00-3S		Date & Time Sampled: 1-Sep-2000		
	pH Value	7.78	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.16	mg/L	0.05	
	Nitrate as N	5.43	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	5.43	mg/L	0.1	
	Carbon, Diss. Org. as C	0.8	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	606.	us/cm	1	
	Sulphate as SO4	21.	mg/L	2	
	Alkalinity CaCO3	300.	mg/L	1	
	Chloride as Cl	9.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	10.8	mg/L	0.02	
	Calculated Hardness CaCO3	387.	mg/L		
	Turbidity	5.33	NTU	0.1	
	Bicarbonate as HCO3	298.	mg/L		
	Carbonate CO3	2.	mg/L		
	Total Cation	8.09	meq/L		
	Total Anions	7.08	meq/L		
	Ion Balance	6.65	% diff.		
	Calculated T.D.S.	384.	mg/L		
	Calculated Conductivity	679.	us/cm		
	Saturation pH @4C	7.44	pH units		
	Saturation pH @20C	7.04	pH units		
	Langelier Index @4C	0.34			
	Langelier Index @20C	0.74			
00-A023971	Sample Description: MW00-3S		Date & Time Sampled: 1-Sep-2000		
	Aluminum Al	0.13	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London | Reported: 6-Sep-2000 | Page: 10

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	1-Sep-2000
Work Order:	71649	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023971	Sample Description: MW00-3S		Date & Time Sampled: 1-Sep-2000		
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.04	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	92.0	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.14	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	38.1	mg/L	0.02	
	Manganese Mn	0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.00	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	7.09	mg/L	0.5	
	Strontium Sr	0.21	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.03	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London　　Reported: 6-Sep-2000　　Page: 11

Attention: MR. DAN BROWN　　Purchase Order:
Client Reference: 001-3105　　Date Received: 1-Sep-2000
Work Order: 71649　　Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023972	Sample Description: MW00-3D		Date & Time Sampled:	1-Sep-2000	
	pH Value	7.80	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.15	mg/L	0.05	
	Nitrate as N	5.49	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	5.49	mg/L	0.1	
	Carbon, Diss. Org. as C	0.8	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	615.	us/cm	1	
	Sulphate as SO4	20.	mg/L	2	
	Alkalinity CaCO3	296.	mg/L	1	
	Chloride as Cl	10.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	10.8	mg/L	0.02	
	Calculated Hardness CaCO3	392.	mg/L		
	Turbidity	10.0	NTU	0.1	
	Bicarbonate as HCO3	294.	mg/L		
	Carbonate CO3	2.	mg/L		
	Total Cation	8.20	meq/L		
	Total Anions	7.01	meq/L		
	Ion Balance	7.82	% diff.		
	Calculated T.D.S.	384.	mg/L		
	Calculated Conductivity	683.	us/cm		
	Saturation pH @4C	7.44	pH units		
	Saturation pH @20C	7.04	pH units		
	Langelier Index @4C	0.36			
	Langelier Index @20C	0.76			
00-A023972	Sample Description: MW00-3D		Date & Time Sampled:	1-Sep-2000	
	Aluminum Al	0.08	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 6-Sep-2000 Page: 12

Attention: MR. DAN BROWN Purchase Order:
Client Reference: 001-3105 Date Received: 1-Sep-2000
Work Order: 71649 Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023972	Sample Description: MW00-3D		Date & Time Sampled: 1-Sep-2000		
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.03	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	93.6	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	0.19	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	38.5	mg/L	0.02	
	Manganese Mn	0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.01	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	7.08	mg/L	0.5	
	Strontium Sr	1.37	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.04	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London	Reported: 6-Sep-2000
Attention: MR. DAN BROWN	Purchase Order:
Client Reference: 001-3105	Date Received: 1-Sep-2000
Work Order: 71649	Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023973	Sample Description: MW00-4S		Date & Time Sampled: 1-Sep-2000		
	pH Value	7.62	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.12	mg/L	0.05	
	Nitrate as N	5.82	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	5.82	mg/L	0.1	
	Carbon. Diss. Org. as C	1.2	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	600.	us/cm	1	
	Sulphate as SO4	17.	mg/L	2	
	Alkalinity CaCO3	279.	mg/L	1	
	Chloride as Cl	7.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	8.68	mg/L	0.02	
	Calculated Hardness CaCO3	368.	mg/L		
	Turbidity	15.3	NTU	0.1	
	Bicarbonate as HCO3	278.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	7.72	meq/L		
	Total Anions	6.55	meq/L		
	Ion Balance	8.25	% diff.		
	Calculated T.D.S.	360.	mg/L		
	Calculated Conductivity	639.	us/cm		
	Saturation pH @4C	7.47	pH units		
	Saturation pH @20C	7.07	pH units		
	Langelier Index @4C	0.15			
	Langelier Index @20C	0.55			
00-A023973	Sample Description: MW00-4S		Date & Time Sampled: 1-Sep-2000		
	Aluminum Al	0.46	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 6-Sep-2000 Page: 14

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649
Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023973	Sample Description: MW00-4S		Date & Time Sampled: 1-Sep-2000		
	Barium Ba	0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.03	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	91.4	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.38	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	33.9	mg/L	0.02	
	Manganese Mn	0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.53	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	7.68	mg/L	0.5	
	Strontium Sr	0.22	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.14	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 6-Sep-2000   Page: 15

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649
Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023974	Sample Description: MW00-4D		Date & Time Sampled: 1-Sep-2000		
	pH Value	7.84	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.08	mg/L	0.05	
	Nitrate as N	4.12	mg/L	0.1	
	Nitrite as N	0.02	mg/L	0.02	
	Nitrate + Nitrite as N	4.14	mg/L	0.1	
	Carbon. Diss. Org. as C	0.8	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	990.	us/cm	1	
	Sulphate as SO4	320.	mg/L	2	
	Alkalinity CaCO3	239.	mg/L	1	
	Chloride as Cl	9.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	9.68	mg/L	0.02	
	Calculated Hardness CaCO3	651.	mg/L		
	Turbidity	8.12	NTU	0.1	
	Bicarbonate as HCO3	237.	mg/L		
	Carbonate CO3	2.	mg/L		
	Total Cation	13.49	meq/L		
	Total Anions	11.99	meq/L		
	Ion Balance	5.90	% diff.		
	Calculated T.D.S.	747.	mg/L		
	Calculated Conductivity	1439.	us/cm		
	Saturation pH @4C	7.24	pH units		
	Saturation pH @20C	6.84	pH units		
	Langelier Index @4C	0.60			
	Langelier Index @20C	1.00			
00-A023974	Sample Description: MW00-4D		Date & Time Sampled: 1-Sep-2000		
	Aluminum Al	6.22	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 6-Sep-2000   Page: 16

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649
Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023974	Sample Description: MW00-4D				Date & Time Sampled: 1-Sep-2000
	Barium Ba	0.21	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.47	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	196.	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	6.31	mg/L	0.02	
	Lead Pb	0.003	mg/L	0.001	
	Magnesium Mg	39.3	mg/L	0.02	
	Manganese Mn	0.09	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.11	mg/L	0.02	
	Potassium K	1.95	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	9.71	mg/L	0.5	
	Strontium Sr	2.61	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.12	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.05	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 6-Sep-2000   Page: 17

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649
Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023975	Sample Description: MW00-5		Date & Time Sampled: 1-Sep-2000		
	pH Value	7.62	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.08	mg/L	0.05	
	Nitrate as N	7.02	mg/L	0.1	
	Nitrite as N	0.13	mg/L	0.02	
	Nitrate + Nitrite as N	7.15	mg/L	0.1	
	Carbon. Diss. Org. as C	0.8	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	695.	us/cm	1	
	Sulphate as SO4	20.	mg/L	2	
	Alkalinity CaCO3	279.	mg/L	1	
	Chloride as Cl	38.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	8.53	mg/L	0.02	
	Calculated Hardness CaCO3	343.	mg/L		
	Turbidity	7.93	NTU	0.1	
	Bicarbonate as HCO3	278.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	8.68	meq/L		
	Total Anions	7.58	meq/L		
	Ion Balance	6.79	% diff.		
	Calculated T.D.S.	426.	mg/L		
	Calculated Conductivity	767.	us/cm		
	Saturation pH @4C	7.50	pH units		
	Saturation pH @20C	7.10	pH units		
	Langelier Index @4C	0.12			
	Langelier Index @20C	0.52			
00-A023975	Sample Description: MW00-5		Date & Time Sampled: 1-Sep-2000		
	Aluminum Al	0.49	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London

Reported: 6-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649

Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023975	Sample Description: MW00-5				Date & Time Sampled: 1-Sep-2000
	Barium Ba	0.05	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.03	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	86.4	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.46	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	30.9	mg/L	0.02	
	Manganese Mn	0.03	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.87	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	40.9	mg/L	0.5	
	Strontium Sr	0.28	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.15	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London　　Reported: 6-Sep-2000　　Page: 19

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	1-Sep-2000
Work Order:	71649	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023976	Sample Description: MW00-6S		Date & Time Sampled:	1-Sep-2000	
	pH Value	7.53	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.12	mg/L	0.05	
	Nitrate as N	5.81	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	5.81	mg/L	0.1	
	Carbon, Diss. Org. as C	0.7	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	680.	us/cm	1	
	Sulphate as SO4	10.	mg/L	2	
	Alkalinity CaCO3	321.	mg/L	1	
	Chloride as Cl	20.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	8.56	mg/L	0.02	
	Calculated Hardness CaCO3	396.	mg/L		
	Turbidity	12.8	NTU	0.1	
	Bicarbonate as HCO3	320.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	8.62	meq/L		
	Total Anions	7.61	meq/L		
	Ion Balance	6.24	% diff.		
	Calculated T.D.S.	410.	mg/L		
	Calculated Conductivity	733.	us/cm		
	Saturation pH @4C	7.37	pH units		
	Saturation pH @20C	6.97	pH units		
	Langelier Index @4C	0.16			
	Langelier Index @20C	0.56			
00-A023976	Sample Description: MW00-6S		Date & Time Sampled:	1-Sep-2000	
	Aluminum Al	0.22	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 6-Sep-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	1-Sep-2000
Work Order:	71649	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023976	Sample Description: MW00-6S		Date & Time Sampled: 1-Sep-2000		
	Barium Ba	0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	102.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.19	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	34.4	mg/L	0.02	
	Manganese Mn	0.03	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.48	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	15.2	mg/L	0.5	
	Strontium Sr	0.19	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.17	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 6-Sep-2000   Page: 21

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	1-Sep-2000
Work Order:	71649	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023977	Sample Description: MW00-7S		Date & Time Sampled:	1-Sep-2000	
	pH Value	7.88	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.17	mg/L	0.05	
	Nitrate as N	7.18	mg/L	0.1	
	Nitrite as N	0.07	mg/L	0.02	
	Nitrate + Nitrite as N	7.25	mg/L	0.1	
	Carbon, Diss. Org. as C	1.2	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	608.	us/cm	1	
	Sulphate as SO4	22.	mg/L	2	
	Alkalinity CaCO3	289.	mg/L	1	
	Chloride as Cl	9.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	10.1	mg/L	0.02	
	Calculated Hardness CaCO3	372.	mg/L		
	Turbidity	33.5	NTU	0.1	
	Bicarbonate as HCO3	287.	mg/L		
	Carbonate CO3	2.	mg/L		
	Total Cation	8.08	meq/L		
	Total Anions	7.01	meq/L		
	Ion Balance	7.13	% diff.		
	Calculated T.D.S.	388.	mg/L		
	Calculated Conductivity	678.	us/cm		
	Saturation pH @4C	7.47	pH units		
	Saturation pH @20C	7.07	pH units		
	Langelier Index @4C	0.41			
	Langelier Index @20C	0.81			
00-A023977	Sample Description: MW00-7S		Date & Time Sampled:	1-Sep-2000	
	Aluminum Al	0.51	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 6-Sep-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	1-Sep-2000
Work Order:	71649	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023977	Sample Description: MW00-7S				Date & Time Sampled: 1-Sep-2000
	Barium Ba	0.06	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.04	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	88.3	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.44	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	36.9	mg/L	0.02	
	Manganese Mn	0.04	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.46	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	13.3	mg/L	0.5	
	Strontium Sr	0.24	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.12	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London
Reported: 6-Sep-2000
Page: 23

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71649
Purchase Order:
Date Received: 1-Sep-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023978	Sample Description: MW00-7D		Date & Time Sampled: 1-Sep-2000		
	pH Value	7.86	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.11	mg/L	0.05	
	Nitrate as N	6.41	mg/L	0.1	
	Nitrite as N	0.05	mg/L	0.02	
	Nitrate + Nitrite as N	6.46	mg/L	0.1	
	Carbon, Diss. Org. as C	0.7	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	559.	us/cm	1	
	Sulphate as SO4	17.	mg/L	2	
	Alkalinity CaCO3	275.	mg/L	1	
	Chloride as Cl	7.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.75	mg/L	0.02	
	Calculated Hardness CaCO3	356.	mg/L		
	Turbidity	3.33	NTU	0.1	
	Bicarbonate as HCO3	273.	mg/L		
	Carbonate CO3	2.	mg/L		
	Total Cation	7.38	meq/L		
	Total Anions	6.51	meq/L		
	Ion Balance	6.23	% diff.		
	Calculated T.D.S.	354.	mg/L		
	Calculated Conductivity	658.	us/cm		
	Saturation pH @4C	7.48	pH units		
	Saturation pH @20C	7.08	pH units		
	Langelier Index @4C	0.38			
	Langelier Index @20C	0.78			
00-A023978	Sample Description: MW00-7D		Date & Time Sampled: 1-Sep-2000		
	Aluminum Al	3.70	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

GOLDER ASSOCIATES
SEP - 5 2000
RECEIVED LONDON

Attention: MR. DAN BROWN
Client Name: Golder Associates Ltd. (London)
Address: 500 Nottinghill Road
London, ON
N6K 3P2
Telephone: 519-471-9600
FAX: 519-471-4707

Laboratory Work Order: 71567

This Certificate of Analysis is for the following:

Sample(s) Received on: 30-Aug-2000 Reported on: 1-Sep-2000
Client Reference: 001-3105
Purchase Order:
Quotation No.:

Results for solid samples are corrected for moisture and reported as dry weight.

Test procedures used are performance based methods referenced from "Standard Methods for the Examination of Water and Wastewater", MOEE, EPA, NIOSH or other published references.

Water samples are discarded 4 weeks after the results have been reported. Solid samples are retained for 3 months. Storage for longer periods requires prior arrangement with the laboratory.

ELECTRONICALLY AUTHORIZED
Signatures to follow on original report.

Reviewed by	Authorized by		
Darlene Hoogenes or Kathie Hughes	Roger Rioux	or	Lorraine DaSilva
Service Representative	Lab Manager		QA Officer

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000   Page: 1

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023559	Sample Description: MW00-4S		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.54	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.43	mg/L	0.05	
	Nitrate as N	6.47	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	6.47	mg/L	0.1	
	Carbon. Diss. Org. as C	0.7	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	583.	us/cm	1	
	Sulphate as SO4	20.	mg/L	2	
	Alkalinity CaCO3	286.	mg/L	1	
	Chloride as Cl	11.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	8.68	mg/L	0.02	
	Calculated Hardness CaCO3	342.	mg/L		
	Turbidity	31.5	NTU	0.1	
	Bicarbonate as HCO3	285.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	7.32	meq/L		
	Total Anions	6.91	meq/L		
	Ion Balance	2.91	% diff.		
	Calculated T.D.S.	367.	mg/L		
	Calculated Conductivity	641.	us/cm		
	Saturation pH @4C	7.51	pH units		
	Saturation pH @20C	7.11	pH units		
	Langelier Index @4C	0.03			
	Langelier Index @20C	0.43			
00-A023559	Sample Description: MW00-4S		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.86	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000   Page: 2

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023559	Sample Description: MW00-4S	Date & Time Sampled: 29-Aug-2000			
	Barium Ba	0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.03	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	82.4	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.59	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	33.0	mg/L	0.02	
	Manganese Mn	0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.79	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	10.3	mg/L	0.5	
	Strontium Sr	0.22	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London	Reported: 1-Sep-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023560	Sample Description: MW00-4D		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.85	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.31	mg/L	0.05	
	Nitrate as N	3.59	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	3.59	mg/L	0.1	
	Carbon, Diss. Org. as C	0.8	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1010	us/cm	1	
	Sulphate as SO4	398.	mg/L	2	
	Alkalinity CaCO3	236.	mg/L	1	
	Chloride as Cl	10.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	15.3	mg/L	0.02	
	Calculated Hardness CaCO3	642.	mg/L		
	Turbidity	25.7	NTU	0.1	
	Bicarbonate as HCO3	234.	mg/L		
	Carbonate CO3	2.	mg/L		
	Total Cation	13.31	meq/L		
	Total Anions	13.54	meq/L		
	Ion Balance	0.84	% diff.		
	Calculated T.D.S.	825.	mg/L		
	Calculated Conductivity	1487.	us/cm		
	Saturation pH @4C	7.26	pH units		
	Saturation pH @20C	6.86	pH units		
	Langelier Index @4C	0.59			
	Langelier Index @20C	0.99			
00-A023560	Sample Description: MW00-4D		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.30	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London	Reported: 1-Sep-2000

Attention: MR. DAN BROWN	Purchase Order:
Client Reference: 001-3105	Date Received: 30-Aug-2000
Work Order: 71567	Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023560	Sample Description: MW00-4D				Date & Time Sampled: 29-Aug-2000
	Barium Ba	0.15	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.64	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	193.	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.17	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	38.8	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	0.03	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.44	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	9.78	mg/L	0.5	
	Strontium Sr	2.48	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.27	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 1-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567

Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023561	Sample Description: MW00-9S		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.54	pH units	0.1	
	Ammonia as N	0.09	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.43	mg/L	0.05	
	Nitrate as N	< 0.1	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	< 0.1	mg/L	0.1	
	Carbon. Diss. Org. as C	2.6	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1600	us/cm	1	
	Sulphate as SO4	639.	mg/L	2	
	Alkalinity CaCO3	365.	mg/L	1	
	Chloride as Cl	49.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	16.2	mg/L	0.02	
	Calculated Hardness CaCO3	966.	mg/L		
	Turbidity	23.6	NTU	0.1	
	Bicarbonate as HCO3	364.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	22.53	meq/L		
	Total Anions	21.97	meq/L		
	Ion Balance	1.25	% diff		
	Calculated T.D.S.	1318.	mg/L		
	Calculated Conductivity	2460.	us/cm		
	Saturation pH @4C	7.08	pH units		
	Saturation pH @20C	6.68	pH units		
	Langelier Index @4C	0.46			
	Langelier Index @20C	0.86			
00-A023561	Sample Description: MW00-9S		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000   Page: 6

Attention: MR. DAN BROWN   Purchase Order:
Client Reference: 001-3105   Date Received: 30-Aug-2000
Work Order: 71567   Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023561	Sample Description: MW00-9S				Date & Time Sampled: 29-Aug-2000
	Barium Ba	0.10	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.36	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	202.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.16	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	112.	mg/L	0.02	
	Manganese Mn	0.27	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	14.1	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	65.9	mg/L	0.5	
	Strontium Sr	3.87	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.09	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd (London), London   Reported: 1-Sep-2000   Page: 7

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference	001-3105	Date Received:	30-Aug-2000
Work Order	71667	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023562	Sample Description: MW00-11S		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.48	pH units	0.1	
	Ammonia as N	0.16	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.75	mg/L	0.05	
	Nitrate as N	5.95	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	5.95	mg/L	0.1	
	Carbon. Diss. Org. as C	1.9	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	502.	us/cm	1	
	Sulphate as SO4	26.	mg/L	2	
	Alkalinity CaCO3	227.	mg/L	1	
	Chloride as Cl	10.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	11.9	mg/L	0.02	
	Calculated Hardness CaCO3	256.	mg/L		
	Turbidity	32.2	NTU	0.1	
	Bicarbonate as HCO3	226.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	6.16	meq/L		
	Total Anions	5.77	meq/L		
	Ion Balance	3.33	% diff.		
	Calculated T.D.S.	324.	mg/L		
	Calculated Conductivity	542.	us/cm		
	Saturation pH @4C	7.68	pH units		
	Saturation pH @20C	7.28	pH units		
	Langelier Index @4C	-0.20			
	Langelier Index @20C	0.20			
00-A023562	Sample Description: MW00-11S		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.62	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London | Reported: 1-Sep-2000 |

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023562	Sample Description: MW00-11S		Date & Time Sampled: 29-Aug-2000		
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.05	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	68.3	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	0.44	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	21.2	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.39	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	21.0	mg/L	0.5	
	Strontium Sr	0.26	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000   Page: 9

Attention: MR. DAN BROWN   Purchase Order:
Client Reference: 001-3105   Date Received: 30-Aug-2000
Work Order: 71567   Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023563	Sample Description: MW00-11D		Date & Time Sampled: 29-Aug-2000		
	pH Value	8.17	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.21	mg/L	0.05	
	Nitrate as N	3.14	mg/L	0.1	
	Nitrite as N	0.04	mg/L	0.02	
	Nitrate + Nitrite as N	3.18	mg/L	0.1	
	Carbon, Diss. Org. as C	0.8	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	603.	us/cm	1	
	Sulphate as SO4	25.	mg/L	2	
	Alkalinity CaCO3	287.	mg/L	1	
	Chloride as Cl	18.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.86	mg/L	0.02	
	Calculated Hardness CaCO3	341.	mg/L		
	Turbidity	3.36	NTU	0.1	
	Bicarbonate as HCO3	283.	mg/L		
	Carbonate CO3	4.	mg/L		
	Total Cation	7.40	meq/L		
	Total Anions	6.99	meq/L		
	Ion Balance	2.80	% diff.		
	Calculated T.D.S.	368.	mg/L		
	Calculated Conductivity	666.	us/cm		
	Saturation pH @4C	7.49	pH units		
	Saturation pH @20C	7.09	pH units		
	Langelier Index @4C	0.68			
	Langelier Index @20C	1.08			
00-A023563	Sample Description: MW00-11D		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.21	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London　　Reported: 1-Sep-2000　　Page: 10

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023563	Sample Description: MW00-11D				Date & Time Sampled: 29-Aug-2000
	Barium Ba	0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	85.1	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.04	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	31.1	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.54	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	12.1	mg/L	0.5	
	Strontium Sr	1.33	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000   Page: 11

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023564	Sample Description: MW00-12D		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.08	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	2.68	mg/L	0.05	
	Nitrate as N	8.95	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	8.95	mg/L	0.1	
	Carbon. Diss. Org. as C	9.8	mg/L	0.5	
	Phosphorus,Diss.Orth as P	0.12	mg/L	0.01	
	Conductivity	1180	us/cm	1	
	Sulphate as SO4	28.	mg/L	2	
	Alkalinity CaCO3	520.	mg/L	1	
	Chloride as Cl	52.	mg/L	1	
	Colour	56.	TCU	5	
	Silica. Reactive as SiO2	8.83	mg/L	0.02	
	Calculated Hardness CaCO3	520.	mg/L		
	Turbidity	11.1	NTU	0.1	
	Bicarbonate as HCO3	519.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	13.89	meq/L		
	Total Anions	13.09	meq/L		
	Ion Balance	2.96	% diff.		
	Calculated T.D.S.	743.	mg/L		
	Calculated Conductivity	1119.	us/cm		
	Saturation pH @4C	7.06	pH units		
	Saturation pH @20C	6.66	pH units		
	Langelier Index @4C	0.02			
	Langelier Index @20C	0.42			
00-A023564	Sample Description: MW00-12D		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.20	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

00-A023564 Sample Description: MW00-12D   Date & Time Sampled: 29-Aug-2000

Sample #	Test	Result	Units	EQL	Comment
00-A023564	Barium Ba	0.07	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.09	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	137.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.02	mg/L	0.01	
	Iron Fe	0.14	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	43.2	mg/L	0.02	
	Manganese Mn	0.20	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.33	mg/L	0.02	
	Potassium K	101.	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	20.9	mg/L	0.5	
	Strontium Sr	0.55	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.07	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023565	Sample Description: MW00-17S		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.42	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.20	mg/L	0.05	
	Nitrate as N	3.64	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	3.64	mg/L	0.1	
	Carbon, Diss. Org. as C	0.7	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1240	us/cm	1	
	Sulphate as SO4	20.	mg/L	2	
	Alkalinity CaCO3	338.	mg/L	1	conf
	Chloride as Cl	214.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	8.47	mg/L	0.02	
	Calculated Hardness CaCO3	429.	mg/L		
	Turbidity	31.5	NTU	0.1	
	Bicarbonate as HCO3	337	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	14.02	meq/L		
	Total Anions	13.47	meq/L		
	Ion Balance	2.01	% diff.		
	Calculated T.D.S	737.	mg/L		
	Calculated Conductivity	1486.	us/cm		
	Saturation pH @4C	7.32	pH units		
	Saturation pH @20C	6.92	pH units		
	Langelier Index @4C	0.10			
	Langelier Index @20C	0.50			
00-A023565	Sample Description: MW00-17S		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.14	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London   Reported: 1-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

00-A023565 Sample Description: MW00-17S   Date & Time Sampled: 29-Aug-2000

Sample #	Test	Result	Units	EQL	Comment
00-A023565	Barium Ba	0.08	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.03	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	114.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.16	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	35.1	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.74	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	123.	mg/L	0.5	
	Strontium Sr	0.34	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.09	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 1-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023566	Sample Description: MW00-17D		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.40	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.16	mg/L	0.05	
	Nitrate as N	2.31	mg/L	0.1	
	Nitrite as N	0.02	mg/L	0.02	
	Nitrate + Nitrite as N	2.33	mg/L	0.1	
	Carbon. Diss. Org. as C	1.3	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1400	us/cm	1	
	Sulphate as SO4	17.	mg/L	2	
	Alkalinity CaCO3	332.	mg/L	1	
	Chloride as Cl	283.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	7.31	mg/L	0.02	
	Calculated Hardness CaCO3	435.	mg/L		
	Turbidity	11.1	NTU	0.1	
	Bicarbonate as HCO3	331.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	15.48	meq/L		
	Total Anions	15.14	meq/L		
	Ion Balance	1.09	% diff.		
	Calculated T.D.S.	827.	mg/L		
	Calculated Conductivity	1711.	us/cm		
	Saturation pH @4C	7.32	pH units		
	Saturation pH @20C	6.92	pH units		
	Langelier Index @4C	0.08			
	Langelier Index @20C	0.48			
00-A023566	Sample Description: MW00-17D		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.07	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

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CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000   Page: 16

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023566	Sample Description: MW00-17D				Date & Time Sampled: 29-Aug-2000
	Barium Ba	0.07	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	1.24	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	119.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	33.5	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	4.86	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	153.	mg/L	0.5	
	Strontium Sr	0.33	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.06	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000   Page: 17

Attention: MR. DAN BROWN   Purchase Order:
Client Reference: 001-3105   Date Received: 30-Aug-2000
Work Order: 71567   Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023567	Sample Description: MW00-18S		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.54	pH units	0.1	
	Ammonia as N	0.10	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.15	mg/L	0.05	
	Nitrate as N	< 0.1	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	< 0.1	mg/L	0.1	
	Carbon, Diss. Org. as C	1.6	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	734.	us/cm	1	
	Sulphate as SO4	105.	mg/L	2	
	Alkalinity CaCO3	322.	mg/L	1	
	Chloride as Cl	11.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	11.3	mg/L	0.02	
	Calculated Hardness CaCO3	441.	mg/L		
	Turbidity	56.5	NTU	0.1	
	Bicarbonate as HCO3	321.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	9.53	meq/L		
	Total Anions	8.93	meq/L		
	Ion Balance	3.24	% diff.		
	Calculated T.D.S.	488.	mg/L		
	Calculated Conductivity	894.	us/cm		
	Saturation pH @4C	7.35	pH units		
	Saturation pH @20C	6.95	pH units		
	Langelier Index @4C	0.19			
	Langelier Index @20C	0.59			
00-A023567	Sample Description: MW00-18S		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.22	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 1-Sep-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023567	Sample Description: MW00-18S				Date & Time Sampled: 29-Aug-2000
	Barium Ba	0.07	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.03	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	108.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.16	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	41.5	mg/L	0.02	
	Manganese Mn	0.03	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.14	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	15.3	mg/L	0.5	
	Strontium Sr	1.74	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.06	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

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CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000   Page: 19

Attention: MR. DAN BROWN   Purchase Order:
Client Reference: 001-3105   Date Received: 30-Aug-2000
Work Order: 71567   Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023568	Sample Description: MW00-18D		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.58	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.11	mg/L	0.05	
	Nitrate as N	0.77	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	0.77	mg/L	0.1	
	Carbon, Diss. Org. as C	0.5	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	627.	us/cm	1	
	Sulphate as SO4	47.	mg/L	2	
	Alkalinity CaCO3	321.	mg/L	1	
	Chloride as Cl	5.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	10.3	mg/L	0.02	
	Calculated Hardness CaCO3	394.	mg/L		
	Turbidity	40.3	NTU	0.1	
	Bicarbonate as HCO3	320.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	8.12	meq/L		
	Total Anions	7.59	meq/L		
	Ion Balance	3.35	% diff.		
	Calculated T.D.S.	399.	mg/L		
	Calculated Conductivity	721.	us/cm		
	Saturation pH @4C	7.39	pH units		
	Saturation pH @20C	6.99	pH units		
	Langelier Index @4C	0.19			
	Langelier Index @20C	0.59			
00-A023568	Sample Description: MW00-18D		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.27	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London | Reported: 1-Sep-2000 |

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023568	Sample Description: MW00-18D				Date & Time Sampled: 29-Aug-2000
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	97.3	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.09	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	36.8	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.27	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	4.08	mg/L	0.5	
	Strontium Sr	1.21	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.06	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client: (1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000

Attention:	MR. DAN BROWN/ MR. BRAD BENSON	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023569	Sample Description: MW00-19S		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.76	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T Kjeldahl as N	0.21	mg/L	0.05	
	Nitrate as N	< 0.1	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	< 0.1	mg/L	0.1	
	Carbon. Diss. Org. as C	1.3	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	673.	us/cm	1	
	Sulphate as SO4	34	mg/L	2	
	Alkalinity CaCO3	295.	mg/L	1	
	Chloride as Cl	35.	mg/L	1	
	Colour	6	TCU	5	
	Silica. Reactive as SiO2	9.10	mg/L	0.02	
	Calculated Hardness CaCO3	360.	mg/L		
	Turbidity	40.1	NTU	0.1	
	Bicarbonate as HCO3	293.	mg/L		
	Carbonate CO3	2	mg/L		
	Total Cation	8.41	meq/L		
	Total Anions	7.59	meq/L		
	Ion Balance	5.10	% diff.		
	Calculated T.D.S.	406.	mg/L		
	Calculated Conductivity	771.	us/cm		
	Saturation pH @4C	7.47	pH units		
	Saturation pH @20C	7.07	pH units		
	Langelier Index @4C	0.29			
	Langelier Index @20C	0.69			
00-A023569	Sample Description: MW00-19S		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.43	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London Reported: 1-Sep-2000

Attention: MR. DAN BROWN/ MR. BRAD BENSON
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023569	Sample Description: MW00-19S				Date & Time Sampled: 29-Aug-2000
	Barium Ba	0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.03	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	87.6	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	0.40	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	34.3	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.98	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	26.8	mg/L	0.5	
	Strontium Sr	0.47	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.18	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 1-Sep-2000

Attention:	MR. DAN BROWN/ MR. BRAD BENSON	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023570	Sample Description: MW00-19D		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.68	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.16	mg/L	0.05	
	Nitrate as N	< 0.1	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	< 0.1	mg/L	0.1	
	Carbon, Diss. Org. as C	1.2	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	566.	us/cm	1	
	Sulphate as SO4	22.	mg/L	2	
	Alkalinity CaCO3	257.	mg/L	1	
	Chloride as Cl	34.	mg/L	1	
	Colour	6.	TCU	5	
	Silica, Reactive as SiO2	8.41	mg/L	0.02	
	Calculated Hardness CaCO3	291.	mg/L		
	Turbidity	54.3	NTU	0.1	
	Bicarbonate as HCO3	256.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	6.76	meq/L		
	Total Anions	6.56	meq/L		
	Ion Balance	1.56	% diff.		
	Calculated T.D.S.	340.	mg/L		
	Calculated Conductivity	637.	us/cm		
	Saturation pH @4C	7.61	pH units		
	Saturation pH @20C	7.21	pH units		
	Langelier Index @4C	0.07			
	Langelier Index @20C	0.47			
00-A023570	Sample Description: MW00-19D		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.15	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 1-Sep-2000

Attention:	MR. DAN BROWN/ MR. BRAD BENSON	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023570	Sample Description: MW00-19D				Date & Time Sampled: 29-Aug-2000
	Barium Ba	0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	71.5	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.06	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	27.3	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.75	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	20.8	mg/L	0.5	
	Strontium Sr	0.54	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.08	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000   Page: 25

Attention:	MR. DAN BROWN/ MR. BRAD BENSON	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023571	Sample Description: MW00-20D		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.53	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.22	mg/L	0.05	
	Nitrate as N	4.84	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	4.84	mg/L	0.1	
	Carbon. Diss. Org. as C	1.1	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1240	us/cm	1	
	Sulphate as SO4	37.	mg/L	2	
	Alkalinity CaCO3	317.	mg/L	1	
	Chloride as Cl	192.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	8.98	mg/L	0.02	
	Calculated Hardness CaCO3	448.	mg/L		
	Turbidity	32.3	NTU	0.1	
	Bicarbonate as HCO3	316.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	14.01	meq/L		
	Total Anions	12.87	meq/L		
	Ion Balance	4.24	% diff.		
	Calculated T.D.S.	723.	mg/L		
	Calculated Conductivity	1445.	us/cm		
	Saturation pH @4C	7.33	pH units		
	Saturation pH @20C	6.93	pH units		
	Langelier Index @4C	0.20			
	Langelier Index @20C	0.60			
00-A023571	Sample Description: MW00-20D		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.13	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000

Attention: MR. DAN BROWN/ MR. BRAD BENSON   Purchase Order:
Client Reference: 001-3105   Date Received: 30-Aug-2000
Work Order: 71567   Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023571	Sample Description: MW00-20D				Date & Time Sampled: 29-Aug-2000
	Barium Ba	0.09	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	119.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	0.13	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	36.6	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.88	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	114.	mg/L	0.5	
	Strontium Sr	0.52	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.12	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000

Attention: MR. DAN BROWN/ MR. BRAD BENSON
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023572	Sample Description: MW00-20S		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.48	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.18	mg/L	0.05	
	Nitrate as N	5.30	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	5.30	mg/L	0.1	
	Carbon. Diss. Org. as C	1.3	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1220	us/cm	1	
	Sulphate as SO4	33.	mg/L	2	
	Alkalinity CaCO3	319.	mg/L	1	
	Chloride as Cl	217.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.59	mg/L	0.02	
	Calculated Hardness CaCO3	463.	mg/L		
	Turbidity	28.2	NTU	0.1	
	Bicarbonate as HCO3	318.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	13.95	meq/L		
	Total Anions	13.56	meq/L		
	Ion Balance	1.42	% diff.		
	Calculated T.D.S.	743.	mg/L		
	Calculated Conductivity	1499.	us/cm		
	Saturation pH @4C	7.31	pH units		
	Saturation pH @20C	6.91	pH units		
	Langelier Index @4C	0.17			
	Langelier Index @20C	0.57			
00-A023572	Sample Description: MW00-20S		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.09	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 1-Sep-2000 Page: 28

Attention:	MR. DAN BROWN/ MR. BRAD BENSON	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023572	Sample Description: MW00-20S				Date & Time Sampled: 29-Aug-2000
	Barium Ba	0.09	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	124.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	37.3	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.33	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	106.	mg/L	0.5	
	Strontium Sr	0.65	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.11	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 1-Sep-2000 Page: 29

Attention: MR. DAN BROWN/ MR. BRAD BENSON
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023573	Sample Description: MW00-22				Date & Time Sampled: 29-Aug-2000
	pH Value	7.50	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.28	mg/L	0.05	
	Nitrate as N	0.15	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	0.15	mg/L	0.1	
	Carbon, Diss. Org. as C	3.1	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	865.	us/cm	1	
	Sulphate as SO4	37.	mg/L	2	
	Alkalinity CaCO3	398.	mg/L	1	
	Chloride as Cl	55.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.68	mg/L	0.02	
	Calculated Hardness CaCO3	406.	mg/L		
	Turbidity	30.6	NTU	0.1	
	Bicarbonate as HCO3	397.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	11.00	meq/L		
	Total Anions	10.29	meq/L		
	Ion Balance	3.35	% diff.		
	Calculated T.D.S.	550.	mg/L		
	Calculated Conductivity	1028.	us/cm		
	Saturation pH @4C	7.24	pH units		
	Saturation pH @20C	6.84	pH units		
	Langelier Index @4C	0.26			
	Langelier Index @20C	0.66			
00-A023573	Sample Description: MW00-22				Date & Time Sampled: 29-Aug-2000
	Aluminum Al	0.43	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000   Page: 30

Attention: MR. DAN BROWN/ MR. BRAD BENSON
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023573	Sample Description: MW00-22		Date & Time Sampled: 29-Aug-2000		
	Barium Ba	0.06	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	114.	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	0.38	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	29.5	mg/L	0.02	
	Manganese Mn	0.03	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.51	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	64.9	mg/L	0.5	
	Strontium Sr	0.20	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.18	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

GOLDER ASSOCIATES
SEP - 5 2000
RECEIVED — LONDON

Attention: MR. DAN BROWN
Client Name: Golder Associates Ltd. (London)
Address: 500 Nottinghill Road
London, ON
N6K 3P1
Telephone: 519-471-9600
FAX: 519-471-4707

Laboratory Work Order: 71547

This Certificate of Analysis is for the following:

Sample(s) Received on: 29-Aug-2000 Reported on: 1-Sep-2000
Client Reference: 001-3105
Purchase Order:
Quotation No.:

Results for solid samples are corrected for moisture and reported as dry weight.

Test procedures used are performance based methods referenced from "Standard Methods for the Examination of Water and Wastewater", MOEE, EPA, NIOSH or other published references.

Water samples are discarded 4 weeks after the results have been reported. Solid samples are retained for 3 months. Storage for longer periods requires prior arrangement with the laboratory.

ELECTRONICALLY AUTHORIZED
Signatures to follow on original report.

Reviewed by	Authorized by
Darlene Hoogenes or Kathie Hughes Service Representative	Roger Rioux or Lorraine DaSilva Lab Manager QA Officer

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London
Reported: 1-Sep-2000
Page: 1

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71547
Purchase Order:
Date Received: 29-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023285	Sample Description: MW00-9d		Date & Time Sampled: 28-Aug-2000		
	pH Value	7.31	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.24	mg/L	0.05	
	Nitrate as N	< 0.1	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	< 0.1	mg/L	0.1	
	Carbon. Diss. Org. as C	< 0.5	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1970	us/cm	1	
	Sulphate as SO4	1420	mg/L	2	
	Alkalinity CaCO3	191.	mg/L	1	
	Chloride as Cl	3.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	9.26	mg/L	0.02	
	Calculated Hardness CaCO3	1670	mg/L		
	Turbidity	18.7	NTU	0.1	
	Bicarbonate as HCO3	191.	mg/L		
	Carbonate CO3	0.	mg/L		
	Total Cation	33.62	meq/L		
	Total Anions	33.44	meq/L		
	Ion Balance	0.26	% diff.		
	Calculated T.D.S.	2191.	mg/L		
	Calculated Conductivity	4073.	us/cm		
	Saturation pH @4C	6.93	pH units		
	Saturation pH @20C	6.53	pH units		
	Langelier Index @4C	0.38			
	Langelier Index @20C	0.78			
00-A023285	Sample Description: MW00-9d		Date & Time Sampled: 28-Aug-2000		
	Aluminum Al	1.24	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London   Reported: 1-Sep-2000   Page: 2

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	29-Aug-2000
Work Order:	71547	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023285	Sample Description: MW00-9d		Date & Time Sampled: 28-Aug-2000		
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.18	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	588.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	2.58	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	49.4	mg/L	0.02	
	Manganese Mn	0.09	mg/L	0.02	
	Molybdenum Mo	0.03	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.04	mg/L	0.02	
	Potassium K	2.61	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	3.28	mg/L	0.5	
	Strontium Sr	14.3	mg/L	0.02	
	Tin Sn	0.08	mg/L	0.07	
	Titanium Ti	0.03	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London　Reported: 1-Sep-2000　

Attention: MR. DAN BROWN　Purchase Order:
Client Reference: 001-3105　Date Received: 29-Aug-2000
Work Order: 71547　Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023286	Sample Description: MW00-10s		Date & Time Sampled: 28-Aug-2000		
	pH Value	7.40	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.37	mg/L	0.05	
	Nitrate as N	3.60	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	3.60	mg/L	0.1	
	Carbon. Diss. Org. as C	1.9	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	901.	us/cm	1	
	Sulphate as SO4	160.	mg/L	2	
	Alkalinity CaCO3	358.	mg/L	1	
	Chloride as Cl	15.	mg/L	1	
	Colour	6.	TCU	5	
	Silica. Reactive as SiO2	10.4	mg/L	0.02	
	Calculated Hardness CaCO3	544.	mg/L		
	Turbidity	45.5	NTU	0.1	
	Bicarbonate as HCO3	357.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	11.68	meq/L		
	Total Anions	11.17	meq/L		
	Ion Balance	2.24	% diff.		
	Calculated T.D.S.	629.	mg/L		
	Calculated Conductivity	1128.	us/cm		
	Saturation pH @4C	7.16	pH units		
	Saturation pH @20C	6.76	pH units		
	Langelier Index @4C	0.24			
	Langelier Index @20C	0.64			
00-A023286	Sample Description: MW00-10s		Date & Time Sampled: 28-Aug-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client (1093) Golder Associates Ltd (London), London   Reported: 1-Sep-2000   Page: 4

Attention MR. DAN BROWN
Client Reference: 001-3106
Work Order: 71647

Purchase Order:
Date Received: 29-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023286	Sample Description: MW00-10s				Date & Time Sampled: 28-Aug-2000
	Barium Ba	0.18	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.27	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	154.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.03	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	38.7	mg/L	0.02	
	Manganese Mn	0.06	mg/L	0.02	
	Molybdenum Mo	0.03	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.95	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	16.3	mg/L	0.5	
	Strontium Sr	1.73	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.47	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000   Page: 5

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71547
Purchase Order:
Date Received: 29-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023287	Sample Description: MW00-10d		Date & Time Sampled: 28-Aug-2000		
	pH Value	7.91	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.26	mg/L	0.05	
	Nitrate as N	1.44	mg/L	0.1	
	Nitrite as N	0.07	mg/L	0.02	
	Nitrate + Nitrite as N	1.51	mg/L	0.1	
	Carbon. Diss. Org. as C	1.4	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1360	us/cm	1	
	Sulphate as SO4	730.	mg/L	2	
	Alkalinity CaCO3	168.	mg/L	1	
	Chloride as Cl	9.	mg/L	1	
	Colour	6.	TCU	5	
	Silica. Reactive as SiO2	10.5	mg/L	0.02	
	Calculated Hardness CaCO3	941.	mg/L		
	Turbidity	69.1	NTU	0.1	
	Bicarbonate as HCO3	167.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	19.41	meq/L		
	Total Anions	18.91	meq/L		
	Ion Balance	1.33	% diff.		
	Calculated T.D.S.	1216.	mg/L		
	Calculated Conductivity	2255.	us/cm		
	Saturation pH @4C	7.26	pH units		
	Saturation pH @20C	6.86	pH units		
	Langelier Index @4C	0.65			
	Langelier Index @20C	1.05			
00-A023287	Sample Description: MW00-10d		Date & Time Sampled: 28-Aug-2000		
	Aluminum Al	0.94	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	29-Aug-2000
Work Order:	71547	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023287	Sample Description: MW00-10d				Date & Time Sampled: 28-Aug-2000
	Barium Ba	0.10	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.07	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	287.	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	1.01	mg/L	0.02	
	Lead Pb	0.003	mg/L	0.001	
	Magnesium Mg	54.5	mg/L	0.02	
	Manganese Mn	0.04	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.08	mg/L	0.02	
	Potassium K	7.67	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	9.44	mg/L	0.5	
	Strontium Sr	3.82	mg/L	0.02	
	Tin Sn	0.07	mg/L	0.07	
	Titanium Ti	0.04	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.06	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Analytical Services 921 Leathorne Street, London, Ontario
N5Z 3M7

AX
RANSMISSION

OVER PAGE

GOLDER ASSOCIATES
SEP - 1 2000
RECEIVED = LONDON

Date: 1-Sep-2000

Number of pages
Including cover sheet: 3

To:

MR. DAN BROWN
Golder Associates Ltd. (London)
London
ON

Fax: 519-471-4707

From:
Kathie

Phone: (519) 686-7558
Fax: (519) 686-6374

REMARKS ☐ Urgent ☐ For your review ☐ Reply ASAP ☐ Please Comment

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London
Reported: 1-Sep-2000
Page: 1

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71608
Purchase Order:
Date Received: 31-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023829	Sample Description: Well 5 0020		Date & Time Sampled: 30-Aug-2000		
	pH Value	7.36	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	~~In Progress~~ 0.23	mg/L	0.05	
	Nitrate as N	5.49	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	5.49	mg/L	0.1	
	Carbon. Diss. Org. as C	In Progress	mg/L	0.5	
	Phosphorus.Diss.Orth as P	~~In Progress~~ <.01	mg/L	0.01	
	Conductivity	In Progress	us/cm	1	
	Sulphate as SO4	In Progress	mg/L	2	
	Alkalinity CaCO3	266.	mg/L	1	
	Chloride as Cl	21.	mg/L	1	
	Colour	In Progress	TCU	5	
	Silica, Reactive as SiO2	In Progress	mg/L	0.02	
	Calculated Hardness CaCO3	334.	mg/L	In Progress	
	Turbidity	In Progress	NTU	0.1	
	Bicarbonate as HCO3	265.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	7.27	meq/L	In Progress	
	Total Anions	In Progress	meq/L	In Progress	
	Ion Balance	In Progress	% diff.	In Progress	
	Calculated T.D.S.	In Progress	mg/L	In Progress	
	Calculated Conductivity	612.	us/cm	In Progress	
	Saturation pH @4C	In Progress	pH units	In Progress	
	Saturation pH @20C	In Progress	pH units	In Progress	
	Langelier Index @4C	In Progress		In Progress	
	Langelier Index @20C	In Progress		In Progress	
00-A023829	Sample Description: Well 5 0020		Date & Time Sampled: 30-Aug-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London
Reported: 1-Sep-2000
Page: 2

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71608
Purchase Order:
Date Received: 31-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023829	Sample Description: Well 5 0020				Date & Time Sampled: 30-Aug-2000
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	85.3	mg/L	0.05	
	Chromium Cr	0.16	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.65	mg/L	0.02	
	Lead Pb	In Progress	mg/L	0.001	
	Magnesium Mg	29.3	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	0.08	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.35	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	13.1	mg/L	0.5	
	Strontium Sr	0.22	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Analytical Services 921 Leathorne Street, London, Ontario
N5Z 3M7

FAX
TRANSMISSION

COVER PAGE

Date: 1-Sep-2000

Number of pages
Including cover sheet: 3

To:

MR. DAN BROWN
Golder Associates Ltd. (London)
London
ON

Fax: 519-471-4707

From:
Kathe

Phone: (519) 686-7558
Fax: (519) 686-6374

REMARKS ☐ Urgent ☐ For your review ☐ Reply ASAP ☐ Please Comment

hilip Services Corporation

RELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Reported: 1-Sep-2000

Page: 1

Client:(1093) Golder Associates Ltd. (London), London

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	29-Aug-2000
Work Order:	71547	Sample Type:	Liquid

00-A023285 Sample Description: MW00-9d

Date & Time Sampled: 28-Aug-2000

Sample #	Test	Result	Units	EQL	Comment
00-A023285	pH Value	7.31	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.24	mg/L	0.05	
	Nitrate as N	< 0.1	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	< 0.1	mg/L	0.1	
	Carbon. Diss. Org. as C	< 0.5	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1970	us/cm	1	
	Sulphate as SO4	~~In Progress~~ 1500	mg/L	2	approx. value
	Alkalinity CaCO3	191.	mg/L	1	
	Chloride as Cl	3.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	9.26	mg/L	0.02	
	Calculated Hardness CaCO3	1670	mg/L	In Progress	
	Turbidity	18.7	NTU	0.1	
	Bicarbonate as HCO3	191.	mg/L	In Progress	
	Carbonate CO3	0.	mg/L	In Progress	
	Total Cation	33.62	meq/L	In Progress	
	Total Anions	In Progress	meq/L	In Progress	
	Ion Balance	In Progress	% diff.	In Progress	
	Calculated T.D.S.	In Progress	mg/L	In Progress	
	Calculated Conductivity	1885.	us/cm	In Progress	
	Saturation pH @4C	In Progress	pH units	In-Progress	
	Saturation pH @20C	In Progress	pH units	In Progress	
	Langelier Index @4C	In Progress		In Progress	
	Langelier Index @20C	In Progress		In Progress	

00-A023285 Sample Description: MW00-9d

Date & Time Sampled: 28-Aug-2000

Sample #	Test	Result	Units	EQL	Comment
00-A023285	Aluminum Al	1.24	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London
Reported: 1-Sep-2000
Page: 2

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	29-Aug-2000
Work Order:	71547	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023285	Sample Description: MW00-9d		Date & Time Sampled: 28-Aug-2000		
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.18	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	588.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	2.58	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	49.4	mg/L	0.02	
	Manganese Mn	0.09	mg/L	0.02	
	Molybdenum Mo	0.03	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.04	mg/L	0.02	
	Potassium K	2.61	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	3.28	mg/L	0.5	
	Strontium Sr	14.3	mg/L	0.02	
	Tin Sn	0.08	mg/L	0.07	
	Titanium Ti	0.03	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

GOLDER ASSOCIATES
AUG 3 1 2000
RECEIVED LONDON

ttention: MR. DAN BROWN
Client Name: Golder Associates Ltd. (London)
Address: 500 Nottinghill Road
London, ON
N6K 3P1
Telephone: 519-471-9600
FAX: 519-471-4707

Laboratory Work Order: 71488

This Certificate of Analysis is for the following:

Sample(s) Received on: 28-Aug-2000
Client Reference: 001-3105
Purchase Order:
Quotation No.:

Reported on: 31-Aug-2000

Results for solid samples are corrected for moisture and reported as dry weight.

Test procedures used are performance based methods referenced from "Standard Methods for the Examination of Water and Wastewater", MOEE, EPA, NIOSH or other published references.

Water samples are discarded 4 weeks after the results have been reported. Solid samples are retained for 3 months. Storage for longer periods requires prior arrangement with the laboratory.

ELECTRONICALLY AUTHORIZED
Signatures to follow on original report.

Reviewed by

Darlene Hoogenes or Kathie Hughes
Service Representative

Authorized by

Roger Rioux or Lorraine DaSilva
Lab Manager QA Officer

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000   Page: 1

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023228	Sample Description: MW00-1s		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.55	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.10	mg/L	0.05	
	Nitrate as N	7.61	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	7.61	mg/L	0.1	
	Carbon. Diss. Org. as C	0.7	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	675.	us/cm	1	
	Sulphate as SO4	12.	mg/L	2	
	Alkalinity CaCO3	290.	mg/L	1	
	Chloride as Cl	45.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	7.22	mg/L	0.02	
	Calculated Hardness CaCO3	340.	mg/L		
	Turbidity	33.0	NTU	0.1	
	Bicarbonate as HCO3	289.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	8.32	meq/L		
	Total Anions	7.86	meq/L		
	Ion Balance	2.82	% diff.		
	Calculated T.D.S.	424.	mg/L		
	Calculated Conductivity	758.	us/cm		
	Saturation pH @4C	7.50	pH units		
	Saturation pH @20C	7.10	pH units		
	Langelier Index @4C	0.05			
	Langelier Index @20C	0.45			
00-A023228	Sample Description: MW00-1s		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	0.35	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:31-Aug-2000 Page: 2

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023228	Sample Description: MW00-1s				Date & Time Sampled: 26-Aug-2000
	Barium Ba	0.48	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.13	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	84.1	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.47	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	31.5	mg/L	0.02	
	Manganese Mn	0.03	mg/L	0.02	
	Molybdenum Mo	0.04	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.52	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	33.1	mg/L	0.5	
	Strontium Sr	0.39	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.15	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London
Reported:31-Aug-2000
Page: 3

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023229	Sample Description: MW00-1d		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.55	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.08	mg/L	0.05	
	Nitrate as N	7.52	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	7.52	mg/L	0.1	
	Carbon. Diss. Org. as C	< 0.5	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	585.	us/cm	1	
	Sulphate as SO4	14.	mg/L	2	
	Alkalinity CaCO3	275.	mg/L	1	
	Chloride as Cl	19.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	7.07	mg/L	0.02	
	Calculated Hardness CaCO3	335.	mg/L		
	Turbidity	0.31	NTU	0.1	
	Bicarbonate as HCO3	274.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	7.22	meq/L		
	Total Anions	6.86	meq/L		
	Ion Balance	2.56	% diff.		
	Calculated T.D.S.	366.	mg/L		
	Calculated Conductivity	632.	us/cm		
	Saturation pH @4C	7.51	pH units		
	Saturation pH @20C	7.11	pH units		
	Langelier Index @4C	0.04			
	Langelier Index @20C	0.44			
00-A023229	Sample Description: MW00-1d		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London
Reported:31-Aug-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023229	Sample Description: MW00-1d		Date & Time Sampled: 26-Aug-2000		
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	84.0	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	30.3	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	0.03	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.84	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	11.3	mg/L	0.5	
	Strontium Sr	0.15	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.04	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:31-Aug-2000 Page: 5

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023230	Sample Description: MW00-2s		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.56	pH units	0.1	
	Ammonia as N	0.06	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.22	mg/L	0.05	
	Nitrate as N	6.19	mg/L	0.1	
	Nitrite as N	0.05	mg/L	0.02	
	Nitrate + Nitrite as N	6.24	mg/L	0.1	
	Carbon, Diss. Org. as C	1.6	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	740.	us/cm	1	
	Sulphate as SO4	21.	mg/L	2	
	Alkalinity CaCO3	322.	mg/L	1	
	Chloride as Cl	47.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.93	mg/L	0.02	
	Calculated Hardness CaCO3	366.	mg/L		
	Turbidity	9.20	NTU	0.1	
	Bicarbonate as HCO3	321.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	9.23	meq/L		
	Total Anions	8.65	meq/L		
	Ion Balance	3.28	% diff.		
	Calculated T.D.S.	472.	mg/L		
	Calculated Conductivity	830.	us/cm		
	Saturation pH @4C	7.43	pH units		
	Saturation pH @20C	7.03	pH units		
	Langelier Index @4C	0.13			
	Langelier Index @20C	0.53			
00-A023230	Sample Description: MW00-2s		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	0.75	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:31-Aug-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023230	Sample Description: MW00-2s		Date & Time Sampled: 26-Aug-2000		
	Barium Ba	0.09	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	89.7	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.71	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	34.5	mg/L	0.02	
	Manganese Mn	0.04	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.03	mg/L	0.02	
	Potassium K	16.5	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	34.3	mg/L	0.5	
	Strontium Sr	0.40	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.04	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.08	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000   Page: 7

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023231	Sample Description: MW00-2d		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.46	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.31	mg/L	0.05	
	Nitrate as N	6.16	mg/L	0.1	
	Nitrite as N	0.05	mg/L	0.02	
	Nitrate + Nitrite as N	6.21	mg/L	0.1	
	Carbon, Diss. Org. as C	2.2	mg/L	0.5	
	Phosphorus,Diss.Orth as P	0.03	mg/L	0.01	
	Conductivity	730.	us/cm	1	
	Sulphate as SO4	20.	mg/L	2	
	Alkalinity CaCO3	309.	mg/L	1	
	Chloride as Cl	55.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.31	mg/L	0.02	
	Calculated Hardness CaCO3	365.	mg/L		
	Turbidity	0.48	NTU	0.1	
	Bicarbonate as HCO3	308.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	9.22	meq/L		
	Total Anions	8.59	meq/L		
	Ion Balance	3.54	% diff.		
	Calculated T.D.S.	473.	mg/L		
	Calculated Conductivity	827.	us/cm		
	Saturation pH @4C	7.43	pH units		
	Saturation pH @20C	7.03	pH units		
	Langelier Index @4C	0.03			
	Langelier Index @20C	0.43			
00-A023231	Sample Description: MW00-2d		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:31-Aug-2000 Page: 8

Attention: MR. DAN BROWN Purchase Order:
Client Reference: 001-3105 Date Received: 28-Aug-2000
Work Order: 71488 Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023231	Sample Description: MW00-2d				Date & Time Sampled: 26-Aug-2000
	Barium Ba	0.05	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	92.9	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	32.2	mg/L	0.02	
	Manganese Mn	0.04	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.03	mg/L	0.02	
	Potassium K	19.7	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	32.9	mg/L	0.5	
	Strontium Sr	0.47	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:31-Aug-2000 Page: 9

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023232	Sample Description: MW00-3s		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.89	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.15	mg/L	0.05	
	Nitrate as N	5.17	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	5.17	mg/L	0.1	
	Carbon, Diss. Org. as C	0.8	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	601.	us/cm	1	
	Sulphate as SO4	24.	mg/L	2	
	Alkalinity CaCO3	315.	mg/L	1	
	Chloride as Cl	16.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	11.1	mg/L	0.02	
	Calculated Hardness CaCO3	367.	mg/L		
	Turbidity	18.2	NTU	0.1	
	Bicarbonate as HCO3	313.	mg/L		
	Carbonate CO3	2.	mg/L		
	Total Cation	8.24	meq/L		
	Total Anions	7.62	meq/L		
	Ion Balance	3.93	% diff.		
	Calculated T.D.S.	405.	mg/L		
	Calculated Conductivity	714.	us/cm		
	Saturation pH @4C	7.50	pH units		
	Saturation pH @20C	7.10	pH units		
	Langelier Index @4C	0.39			
	Langelier Index @20C	0.79			
00-A023232	Sample Description: MW00-3s		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:31-Aug-2000 Page: 10

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023232	Sample Description: MW00-3s		Date & Time Sampled: 26-Aug-2000		
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.16	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	77.0	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	42.5	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.14	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	18.9	mg/L	0.5	
	Strontium Sr	0.29	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.04	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:31-Aug-2000 Page: 11

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023233	Sample Description: MW00-3d		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.72	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.07	mg/L	0.05	
	Nitrate as N	5.08	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	5.08	mg/L	0.1	
	Carbon, Diss. Org. as C	0.7	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	650	us/cm	1	
	Sulphate as SO4	89.	mg/L	2	
	Alkalinity CaCO3	264.	mg/L	1	
	Chloride as Cl	8.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	8.16	mg/L	0.02	
	Calculated Hardness CaCO3	403.	mg/L		
	Turbidity	2.20	NTU	0.1	
	Bicarbonate as HCO3	263.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	8.45	meq/L		
	Total Anions	7.72	meq/L		
	Ion Balance	4.50	% diff.		
	Calculated T.D.S.	438.	mg/L		
	Calculated Conductivity	772.	us/cm		
	Saturation pH @4C	7.42	pH units		
	Saturation pH @20C	7.02	pH units		
	Langelier Index @4C	0.30			
	Langelier Index @20C	0.70			
00-A023233	Sample Description: MW00-3d		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023233	Sample Description: MW00-3d				Date & Time Sampled: 26-Aug-2000
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	110.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.04	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	31.2	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	4.34	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	6.43	mg/L	0.5	
	Strontium Sr	1.04	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London
Reported:31-Aug-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023234	Sample Description: MW00-5		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.60	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.20	mg/L	0.05	
	Nitrate as N	6.89	mg/L	0.1	
	Nitrite as N	0.03	mg/L	0.02	
	Nitrate + Nitrite as N	6.92	mg/L	0.1	
	Carbon, Diss. Org. as C	0.7	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	667.	us/cm	1	
	Sulphate as SO4	20.	mg/L	2	
	Alkalinity CaCO3	295.	mg/L	1	
	Chloride as Cl	37.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	8.99	mg/L	0.02	
	Calculated Hardness CaCO3	328.	mg/L		
	Turbidity	21.6	NTU	0.1	
	Bicarbonate as HCO3	294.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	8.36	meq/L		
	Total Anions	7.85	meq/L		
	Ion Balance	3.11	% diff.		
	Calculated T.D.S.	428.	mg/L		
	Calculated Conductivity	786.	us/cm		
	Saturation pH @4C	7.50	pH units		
	Saturation pH @20C	7.10	pH units		
	Langelier Index @4C	0.10			
	Langelier Index @20C	0.50			
00-A023234	Sample Description: MW00-5		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	2.69	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London | Reported:31-Aug-2000 |

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023234	Sample Description: MW00-5		Date & Time Sampled: 26-Aug-2000		
	Barium Ba	0.95	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.07	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	81.5	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	3.64	mg/L	0.02	
	Lead Pb	0.004	mg/L	0.001	
	Magnesium Mg	30.3	mg/L	0.02	
	Manganese Mn	0.15	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.13	mg/L	0.02	
	Potassium K	2.06	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	40.1	mg/L	0.5	
	Strontium Sr	0.35	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.08	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.25	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000   Page: 15

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023235	Sample Description: MW00-6s		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.51	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.07	mg/L	0.05	
	Nitrate as N	6.85	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	6.85	mg/L	0.1	
	Carbon, Diss. Org. as C	0.6	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	630.	us/cm	1	
	Sulphate as SO4	21.	mg/L	2	
	Alkalinity CaCO3	289.	mg/L	1	
	Chloride as Cl	27.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.66	mg/L	0.02	
	Calculated Hardness CaCO3	352.	mg/L		
	Turbidity	6.44	NTU	0.1	
	Bicarbonate as HCO3	288.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	8.15	meq/L		
	Total Anions	7.47	meq/L		
	Ion Balance	4.39	% diff.		
	Calculated T.D.S.	406.	mg/L		
	Calculated Conductivity	724.	us/cm		
	Saturation pH @4C	7.48	pH units		
	Saturation pH @20C	7.08	pH units		
	Langelier Index @4C	0.03			
	Langelier Index @20C	0.43			
00-A023235	Sample Description: MW00-6s		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	0.75	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023235	Sample Description: MW00-6s				Date & Time Sampled: 26-Aug-2000
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	88.0	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.70	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	32.2	mg/L	0.02	
	Manganese Mn	0.03	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.16	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	24.3	mg/L	0.5	
	Strontium Sr	0.22	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.04	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.04	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000   Page: 17

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023236	Sample Description: MW00-6d		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.66	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.10	mg/L	0.05	
	Nitrate as N	7.50	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	7.50	mg/L	0.1	
	Carbon, Diss. Org. as C	0.5	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	583.	us/cm	1	
	Sulphate as SO4	13.	mg/L	2	
	Alkalinity CaCO3	269.	mg/L	1	
	Chloride as Cl	22.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	6.89	mg/L	0.02	
	Calculated Hardness CaCO3	349.	mg/L		
	Turbidity	1.16	NTU	0.1	
	Bicarbonate as HCO3	268.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	7.66	meq/L		
	Total Anions	6.81	meq/L		
	Ion Balance	5.88	% diff.		
	Calculated T.D.S.	373.	mg/L		
	Calculated Conductivity	656.	us/cm		
	Saturation pH @4C	7.50	pH units		
	Saturation pH @20C	7.10	pH units		
	Langelier Index @4C	0.16			
	Langelier Index @20C	0.56			
00-A023236	Sample Description: MW00-6d		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:31-Aug-2000 Page: 18

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023236	Sample Description: MW00-6d		Date & Time Sampled: 26-Aug-2000		
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	88.8	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.04	mg/L	0.02	
	Lead Pb	0.001	mg/L	0.001	
	Magnesium Mg	31.0	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.85	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	14.4	mg/L	0.5	
	Strontium Sr	0.18	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	< 0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London   Reported:31-Aug-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023237	Sample Description: MW00-7s				Date & Time Sampled: 26-Aug-2000
	pH Value	7.73	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.20	mg/L	0.05	
	Nitrate as N	6.85	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	6.85	mg/L	0.1	
	Carbon. Diss. Org. as C	0.8	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	596.	us/cm	1	
	Sulphate as SO4	22.	mg/L	2	
	Alkalinity CaCO3	298.	mg/L	1	
	Chloride as Cl	10.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	8.84	mg/L	0.02	
	Calculated Hardness CaCO3	354.	mg/L		
	Turbidity	13.5	NTU	0.1	
	Bicarbonate as HCO3	296.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	7.77	meq/L		
	Total Anions	7.19	meq/L		
	Ion Balance	3.88	% diff.		
	Calculated T.D.S.	386.	mg/L		
	Calculated Conductivity	680.	us/cm		
	Saturation pH @4C	7.48	pH units		
	Saturation pH @20C	7.08	pH units		
	Langelier Index @4C	0.25			
	Langelier Index @20C	0.65			
00-A023237	Sample Description: MW00-7s				Date & Time Sampled: 26-Aug-2000
	Aluminum Al	1.41	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000

Attention: MR. DAN BROWN   Purchase Order:
Client Reference: 001-3105   Date Received: 28-Aug-2000
Work Order: 71488   Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023237	Sample Description: MW00-7s		Date & Time Sampled: 26-Aug-2000		
	Barium Ba	0.44	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.08	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	84.4	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	1.53	mg/L	0.02	
	Lead Pb	0.024	mg/L	0.001	
	Magnesium Mg	34.7	mg/L	0.02	
	Manganese Mn	0.07	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.04	mg/L	0.02	
	Potassium K	2.43	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	14.7	mg/L	0.5	
	Strontium Sr	0.29	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.03	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.15	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:31-Aug-2000 Page: 21

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023238	Sample Description: MW00-7d		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.69	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.29	mg/L	0.05	
	Nitrate as N	6.00	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	6.00	mg/L	0.1	
	Carbon. Diss. Org. as C	0.6	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	543.	us/cm	1	
	Sulphate as SO4	18.	mg/L	2	
	Alkalinity CaCO3	268.	mg/L	1	
	Chloride as Cl	10.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	7.63	mg/L	0.02	
	Calculated Hardness CaCO3	347.	mg/L		
	Turbidity	1.26	NTU	0.1	
	Bicarbonate as HCO3	267.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	7.20	meq/L		
	Total Anions	6.44	meq/L		
	Ion Balance	5.51	% diff.		
	Calculated T.D.S.	348.	mg/L		
	Calculated Conductivity	611.	us/cm		
	Saturation pH @4C	7.50	pH units		
	Saturation pH @20C	7.10	pH units		
	Langelier Index @4C	0.19			
	Langelier Index @20C	0.59			
00-A023238	Sample Description: MW00-7d		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London | Reported:31-Aug-2000 |

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023238	Sample Description: MW00-7d		Date & Time Sampled: 26-Aug-2000		
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	88.0	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	30.8	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.01	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	5.62	mg/L	0.5	
	Strontium Sr	0.17	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.03	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000   Page: 23

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023239	Sample Description: MW00-8s		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.65	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.24	mg/L	0.05	
	Nitrate as N	19.6	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	19.6	mg/L	0.1	
	Carbon, Diss. Org. as C	2.3	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	640.	us/cm	1	
	Sulphate as SO4	14.	mg/L	2	
	Alkalinity CaCO3	263.	mg/L	1	
	Chloride as Cl	18.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	5.76	mg/L	0.02	
	Calculated Hardness CaCO3	391.	mg/L		
	Turbidity	10.0	NTU	0.1	
	Bicarbonate as HCO3	262.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	8.11	meq/L		
	Total Anions	7.46	meq/L		
	Ion Balance	4.21	% diff.		
	Calculated T.D.S.	419.	mg/L		
	Calculated Conductivity	682.	us/cm		
	Saturation pH @4C	7.53	pH units		
	Saturation pH @20C	7.13	pH units		
	Langelier Index @4C	0.12			
	Langelier Index @20C	0.52			
00-A023239	Sample Description: MW00-8s		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	0.50	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London | Reported:31-Aug-2000 |

Attention: MR. DAN BROWN	Purchase Order:
Client Reference: 001-3105	Date Received: 28-Aug-2000
Work Order: 71488	Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023239	Sample Description: MW00-8s		Date & Time Sampled: 26-Aug-2000		
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	86.8	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	0.34	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	42.4	mg/L	0.02	
	Manganese Mn	0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.76	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	5.69	mg/L	0.5	
	Strontium Sr	0.23	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.05	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:31-Aug-2000 Page: 25

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023240	Sample Description: MW00-8d		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.46	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.08	mg/L	0.05	
	Nitrate as N	5.67	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	5.67	mg/L	0.1	
	Carbon, Diss. Org. as C	0.7	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	550.	us/cm	1	
	Sulphate as SO4	18.	mg/L	2	
	Alkalinity CaCO3	276.	mg/L	1	
	Chloride as Cl	9.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.75	mg/L	0.02	
	Calculated Hardness CaCO3	352.	mg/L		
	Turbidity	0.94	NTU	0.1	
	Bicarbonate as HCO3	275.	mg/L		
	Carbonate CO3	1.	mg/L		
	Total Cation	7.28	meq/L		
	Total Anions	6.55	meq/L		
	Ion Balance	5.27	% diff.		
	Calculated T.D.S.	353.	mg/L		
	Calculated Conductivity	617.	us/cm		
	Saturation pH @4C	7.48	pH units		
	Saturation pH @20C	7.08	pH units		
	Langelier Index @4C	-0.02			
	Langelier Index @20C	0.38			
00-A023240	Sample Description: MW00-8d		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:31-Aug-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023240	Sample Description: MW00-8d		Date & Time Sampled: 26-Aug-2000		
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	89.7	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	31.0	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.21	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	5.14	mg/L	0.5	
	Strontium Sr	0.20	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.02	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

GOLDER ASSOCIATES
SEP - 1 2000
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Client:(1C93) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000   Page: 1

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023559	Sample Description: MW00-4S		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.54	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.43	mg/L	0.05	
	Nitrate as N	6.47	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	6.47	mg/L	0.1	
	Carbon, Diss. Org. as C	0.7	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	583.	us/cm	1	
	Sulphate as SO4	20.	mg/L	2	
	Alkalinity CaCO3	286.	mg/L	1	
	Chloride as Cl	11.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	8.68	mg/L	0.02	
	Calculated Hardness CaCO3	342.	mg/L	In Progress	
	Turbidity	31.5	NTU	0.1	
	Bicarbonate as HCO3	285.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	7.32	meq/L	In Progress	
	Total Anions	6.91	meq/L	In Progress	
	Ion Balance	2.91	% diff.	In Progress	
	Calculated T.D.S.	367.	mg/L	In Progress	
	Calculated Conductivity	641.	us/cm	In Progress	
	Saturation pH @4C	7.51	pH units	In Progress	
	Saturation pH @20C	7.11	pH units	In Progress	
	Langelier Index @4C	0.03		In Progress	
	Langelier Index @20C	0.43		In Progress	
00-A023559	Sample Description: MW00-4S		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.86	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000   Page: 2

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567

Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023559	Sample Description: MW00-4S		Date & Time Sampled: 29-Aug-2000		
	Barium Ba	0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.03	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	82.4	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.59	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	33.0	mg/L	0.02	
	Manganese Mn	0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.79	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	10.3	mg/L	0.5	
	Strontium Sr	0.22	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000

Attention: MR. DAN BROWN	Purchase Order:
Client Reference: 001-3105	Date Received: 30-Aug-2000
Work Order: 71567	Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023560	Sample Description: MW00-4D		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.85	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.31	mg/L	0.05	
	Nitrate as N	3.59	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	3.59	mg/L	0.1	
	Carbon. Diss. Org. as C	0.8	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1010	us/cm	1	
	Sulphate as SO4	398.	mg/L	2	
	Alkalinity CaCO3	236.	mg/L	1	
	Chloride as Cl	10.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	15.3	mg/L	0.02	
	Calculated Hardness CaCO3	642.	mg/L	In Progress	
	Turbidity	25.7	NTU	0.1	
	Bicarbonate as HCO3	234.	mg/L	In Progress	
	Carbonate CO3	2.	mg/L	In Progress	
	Total Cation	13.31	meq/L	In Progress	
	Total Anions	13.54	meq/L	In Progress	
	Ion Balance	0.84	% diff.	In Progress	
	Calculated T.D.S.	825.	mg/L	In Progress	
	Calculated Conductivity	1487.	us/cm	In Progress	
	Saturation pH @4C	7.26	pH units	In Progress	
	Saturation pH @20C	6.86	pH units	In Progress	
	Langelier Index @4C	0.59		In Progress	
	Langelier Index @20C	0.99		In Progress	
00-A023560	Sample Description: MW00-4D		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.30	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 1-Sep-2000 Page: 4

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023560	Sample Description: MW00-4D				Date & Time Sampled: 29-Aug-2000
	Barium Ba	0.15	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.64	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	193.	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.17	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	38.8	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	0.03	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.44	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	9.78	mg/L	0.5	
	Strontium Sr	2.48	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.27	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London
Reported: 1-Sep-2000
Page: 5

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023561	Sample Description: MW00-9S		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.54	pH units	0.1	
	Ammonia as N	0.09	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.43	mg/L	0.05	
	Nitrate as N	< 0.1	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	< 0.1	mg/L	0.1	
	Carbon. Diss. Org. as C	2.6	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1600	us/cm	1	
	Sulphate as SO4	639.	mg/L	2	
	Alkalinity CaCO3	365.	mg/L	1	
	Chloride as Cl	49.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	16.2	mg/L	0.02	
	Calculated Hardness CaCO3	966.	mg/L	In Progress	
	Turbidity	23.6	NTU	0.1	
	Bicarbonate as HCO3	364.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	22.53	meq/L	In Progress	
	Total Anions	21.97	meq/L	In Progress	
	Ion Balance	1.25	% diff.	In Progress	
	Calculated T.D.S.	1318.	mg/L	In Progress	
	Calculated Conductivity	2460.	us/cm	In Progress	
	Saturation pH @4C	7.08	pH units	In Progress	
	Saturation pH @20C	6.68	pH units	In Progress	
	Langelier Index @4C	0.46		In Progress	
	Langelier Index @20C	0.86		In Progress	
00-A023561	Sample Description: MW00-9S		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000   Page: 6

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023561	Sample Description: MW00-9S		Date & Time Sampled: 29-Aug-2000		
	Barium Ba	0.10	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.36	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	202.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.16	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	112.	mg/L	0.02	
	Manganese Mn	0.27	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	14.1	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	65.9	mg/L	0.5	
	Strontium Sr	3.87	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.09	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London   Reported: 1-Sep-2000   Page: 7

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023562	Sample Description: MW00-11S		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.48	pH units	0.1	
	Ammonia as N	0.16	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.75	mg/L	0.05	
	Nitrate as N	5.95	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	5.95	mg/L	0.1	
	Carbon. Diss. Org. as C	1.9	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	502.	us/cm	1	
	Sulphate as SO4	25.	mg/L	2	
	Alkalinity CaCO3	227.	mg/L	1	
	Chloride as Cl	10.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	11.9	mg/L	0.02	
	Calculated Hardness CaCO3	258.	mg/L	In Progress	
	Turbidity	32.2	NTU	0.1	
	Bicarbonate as HCO3	226.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	6.16	meq/L	In Progress	
	Total Anions	5.77	meq/L	In Progress	
	Ion Balance	3.33	% diff.	In Progress	
	Calculated T.D.S.	324.	mg/L	In Progress	
	Calculated Conductivity	542.	us/cm	In Progress	
	Saturation pH @4C	7.68	pH units	In Progress	
	Saturation pH @20C	7.28	pH units	In Progress	
	Langelier Index @4C	-0.20		In Progress	
	Langelier Index @20C	0.20		In Progress	
00-A023562	Sample Description: MW00-11S		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.62	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 1-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023562	Sample Description: MW00-11S				Date & Time Sampled: 29-Aug-2000
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.05	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	68.3	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	0.44	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	21.2	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.39	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	21.0	mg/L	0.5	
	Strontium Sr	0.26	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London　　Reported: 1-Sep-2000　　

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023563	Sample Description: MW00-11D		Date & Time Sampled: 29-Aug-2000		
	pH Value	8.17	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.21	mg/L	0.05	
	Nitrate as N	3.14	mg/L	0.1	
	Nitrite as N	0.04	mg/L	0.02	
	Nitrate + Nitrite as N	3.18	mg/L	0.1	
	Carbon, Diss. Org. as C	0.8	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	603.	us/cm	1	
	Sulphate as SO4	25.	mg/L	2	
	Alkalinity CaCO3	287.	mg/L	1	
	Chloride as Cl	18.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.86	mg/L	0.02	
	Calculated Hardness CaCO3	341.	mg/L	In Progress	
	Turbidity	3.36	NTU	0.1	
	Bicarbonate as HCO3	283.	mg/L	In Progress	
	Carbonate CO3	4.	mg/L	In Progress	
	Total Cation	7.40	meq/L	In Progress	
	Total Anions	6.99	meq/L	In Progress	
	Ion Balance	2.80	% diff.	In Progress	
	Calculated T.D.S.	368.	mg/L	In Progress	
	Calculated Conductivity	666.	us/cm	In Progress	
	Saturation pH @4C	7.49	pH units	In Progress	
	Saturation pH @20C	7.09	pH units	In Progress	
	Langelier Index @4C	0.68		In Progress	
	Langelier Index @20C	1.08		In Progress	
00-A023563	Sample Description: MW00-11D		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.21	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023563	Sample Description: MW00-11D				Date & Time Sampled: 29-Aug-2000
	Barium Ba	0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	85.1	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.04	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	31.1	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.54	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	12.1	mg/L	0.5	
	Strontium Sr	1.33	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London   Reported: 1-Sep-2000   Page: 11

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023564	Sample Description: MW00-12D		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.08	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	2.68	mg/L	0.05	
	Nitrate as N	8.95	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	8.95	mg/L	0.1	
	Carbon. Diss. Org. as C	9.8	mg/L	0.5	
	Phosphorus.Diss.Orth as P	0.12	mg/L	0.01	
	Conductivity	1180	us/cm	1	
	Sulphate as SO4	28.	mg/L	2	
	Alkalinity CaCO3	520.	mg/L	1	
	Chloride as Cl	52.	mg/L	1	
	Colour	56.	TCU	5	
	Silica. Reactive as SiO2	8.83	mg/L	0.02	
	Calculated Hardness CaCO3	520.	mg/L	In Progress	
	Turbidity	11.1	NTU	0.1	
	Bicarbonate as HCO3	519.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	13.89	meq/L	In Progress	
	Total Anions	13.09	meq/L	In Progress	
	Ion Balance	2.96	% diff.	In Progress	
	Calculated T.D.S.	743.	mg/L	In Progress	
	Calculated Conductivity	1119.	us/cm	In Progress	
	Saturation pH @4C	7.06	pH units	In Progress	
	Saturation pH @20C	6.66	pH units	In Progress	
	Langelier Index @4C	0.02		In Progress	
	Langelier Index @20C	0.42		In Progress	
00-A023564	Sample Description: MW00-12D		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.20	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023564	Sample Description: MW00-12D				Date & Time Sampled: 29-Aug-2000
	Barium Ba	0.07	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.09	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	137.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.02	mg/L	0.01	
	Iron Fe	0.14	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	43.2	mg/L	0.02	
	Manganese Mn	0.20	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.33	mg/L	0.02	
	Potassium K	101.	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	20.9	mg/L	0.5	
	Strontium Sr	0.55	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.07	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client: (1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000   Page: 13

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71667	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023565	Sample Description: MW00-17S		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.42	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.20	mg/L	0.05	
	Nitrate as N	3.64	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	3.64	mg/L	0.1	
	Carbon, Diss. Org. as C	0.7	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1240	us/cm	1	
	Sulphate as SO4	20.	mg/L	2	
	Alkalinity CaCO3	338.	mg/L	1	
	Chloride as Cl	107.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	8.47	mg/L	0.02	
	Calculated Hardness CaCO3	429.	mg/L	In Progress	
	Turbidity	31.5	NTU	0.1	
	Bicarbonate as HCO3	337.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	14.02	meq/L	In Progress	
	Total Anions	10.45	meq/L	In Progress	
	Ion Balance	14.6	% diff.	In Progress	
	Calculated T.D.S.	630.	mg/L	In Progress	
	Calculated Conductivity	1229.	us/cm	In Progress	
	Saturation pH @4C	7.32	pH units	In Progress	
	Saturation pH @20C	6.92	pH units	In Progress	
	Langelier Index @4C	0.10		In Progress	
	Langelier Index @20C	0.50		In Progress	
00-A023565	Sample Description: MW00-17S		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.14	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023565	Sample Description: MW00-17S				Date & Time Sampled: 29-Aug-2000
	Barium Ba	0.08	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.03	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	114.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.16	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	35.1	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.74	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	123.	mg/L	0.5	
	Strontium Sr	0.34	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.09	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000

Attention: MR. DAN BROWN   Purchase Order:
Client Reference: 001-3105   Date Received: 30-Aug-2000
Work Order: 71567   Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023566	Sample Description: MW00-17D		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.40	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.16	mg/L	0.05	
	Nitrate as N	2.31	mg/L	0.1	
	Nitrite as N	0.02	mg/L	0.02	
	Nitrate + Nitrite as N	2.33	mg/L	0.1	
	Carbon. Diss. Org. as C	1.3	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1400	us/cm	1	
	Sulphate as SO4	17.	mg/L	2	
	Alkalinity CaCO3	332.	mg/L	1	
	Chloride as Cl	283.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	7.31	mg/L	0.02	
	Calculated Hardness CaCO3	435.	mg/L	In Progress	
	Turbidity	11.1	NTU	0.1	
	Bicarbonate as HCO3	331.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	15.48	meq/L	In Progress	
	Total Anions	15.14	meq/L	In Progress	
	Ion Balance	1.09	% diff.	In Progress	
	Calculated T.D.S.	827.	mg/L	In Progress	
	Calculated Conductivity	1711.	us/cm	In Progress	
	Saturation pH @4C	7.32	pH units	In Progress	
	Saturation pH @20C	6.92	pH units	In Progress	
	Langelier Index @4C	0.08		In Progress	
	Langelier Index @20C	0.48		In Progress	
00-A023566	Sample Description: MW00-17D		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.07	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London　　Reported: 1-Sep-2000　　Page: 16

Attention: MR. DAN BROWN　　Purchase Order:
Client Reference: 001-3105　　Date Received: 30-Aug-2000
Work Order: 71567　　Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023566	Sample Description: MW00-17D		Date & Time Sampled: 29-Aug-2000		
	Barium Ba	0.07	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	1.24	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	119.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	33.5	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	4.86	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	153.	mg/L	0.5	
	Strontium Sr	0.33	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.06	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 1-Sep-2000 Page: 17

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023567	Sample Description: MW00-18S		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.54	pH units	0.1	
	Ammonia as N	0.10	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.15	mg/L	0.05	
	Nitrate as N	< 0.1	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	< 0.1	mg/L	0.1	
	Carbon, Diss. Org. as C	1.6	mg/l	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	734.	us/cm	1	
	Sulphate as SO4	105.	mg/L	2	
	Alkalinity CaCO3	322.	mg/L	1	
	Chloride as Cl	11.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	11.3	mg/L	0.02	
	Calculated Hardness CaCO3	441.	mg/L	In Progress	
	Turbidity	56.5	NTU	0.1	
	Bicarbonate as HCO3	321.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	9.53	meq/L	In Progress	
	Total Anions	8.93	meq/L	In Progress	
	Ion Balance	3.24	% diff.	In Progress	
	Calculated T.D.S.	488.	mg/L	In Progress	
	Calculated Conductivity	894.	us/cm	In Progress	
	Saturation pH @4C	7.35	pH units	In Progress	
	Saturation pH @20C	6.95	pH units	In Progress	
	Langelier Index @4C	0.19		In Progress	
	Langelier Index @20C	0.59		In Progress	
00-A023567	Sample Description: MW00-18S		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.22	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London

Reported: 1-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567

Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023567	Sample Description: MW00-18S		Date & Time Sampled: 29-Aug-2000		
	Barium Ba	0.07	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.03	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	108.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.16	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	41.5	mg/L	0.02	
	Manganese Mn	0.03	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.14	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	15.3	mg/L	0.5	
	Strontium Sr	1.74	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.06	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023568	Sample Description: MW00-18D		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.58	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.11	mg/L	0.05	
	Nitrate as N	0.77	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	0.77	mg/L	0.1	
	Carbon, Diss. Org. as C	0.5	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	627.	us/cm	1	
	Sulphate as SO4	47.	mg/L	2	
	Alkalinity CaCO3	321.	mg/L	1	
	Chloride as Cl	5.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	10.3	mg/L	0.02	
	Calculated Hardness CaCO3	394.	mg/L	In Progress	
	Turbidity	40.3	NTU	0.1	
	Bicarbonate as HCO3	320.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	8.12	meq/L	In Progress	
	Total Anions	7.59	meq/L	In Progress	
	Ion Balance	3.35	% diff.	In Progress	
	Calculated T.D.S.	399.	mg/L	In Progress	
	Calculated Conductivity	721.	us/cm	In Progress	
	Saturation pH @4C	7.39	pH units	In Progress	
	Saturation pH @20C	6.99	pH units	In Progress	
	Langelier Index @4C	0.19		In Progress	
	Langelier Index @20C	0.59		In Progress	
00-A023568	Sample Description: MW00-18D		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.27	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

00-A023568 Sample Description: MW00-18D   Date & Time Sampled: 29-Aug-2000

Sample #	Test	Result	Units	EQL	Comment
00-A023568	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	97.3	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.09	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	36.8	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.27	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	4.08	mg/L	0.5	
	Strontium Sr	1.21	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.06	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000   Page: 21

Attention:	MR. DAN BROWN/ MR. BRAD BENSON	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023569	Sample Description: MW00-19S		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.76	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.21	mg/L	0.05	
	Nitrate as N	< 0.1	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	< 0.1	mg/L	0.1	
	Carbon, Diss. Org. as C	1.3	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	673.	us/cm	1	
	Sulphate as SO4	34.	mg/L	2	
	Alkalinity CaCO3	295.	mg/L	1	
	Chloride as Cl	35.	mg/L	1	
	Colour	6.	TCU	5	
	Silica, Reactive as SiO2	9.10	mg/L	0.02	
	Calculated Hardness CaCO3	360.	mg/L	In Progress	
	Turbidity	40.1	NTU	0.1	
	Bicarbonate as HCO3	293.	mg/L	In Progress	
	Carbonate CO3	2.	mg/L	In Progress	
	Total Cation	8.41	meq/L	In Progress	
	Total Anions	7.59	meq/L	In Progress	
	Ion Balance	5.10	% diff.	In Progress	
	Calculated T.D.S.	406.	mg/L	In Progress	
	Calculated Conductivity	771.	us/cm	In Progress	
	Saturation pH @4C	7.47	pH units	In Progress	
	Saturation pH @20C	7.07	pH units	In Progress	
	Langelier Index @4C	0.29		In Progress	
	Langelier Index @20C	0.69		In Progress	
00-A023569	Sample Description: MW00-19S		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.43	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 1-Sep-2000

Attention:	MR. DAN BROWN/ MR. BRAD BENSON	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023569	Sample Description: MW00-19S				Date & Time Sampled: 29-Aug-2000
	Barium Ba	0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.03	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	87.6	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	0.40	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	34.3	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.98	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	26.8	mg/L	0.5	
	Strontium Sr	0.47	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.18	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported: 1-Sep-2000

Attention:	MR. DAN BROWN/ MR. BRAD BENSON	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023570	Sample Description: MW00-19D		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.68	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.16	mg/L	0.05	
	Nitrate as N	< 0.1	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	< 0.1	mg/L	0.1	
	Carbon, Diss. Org. as C	1.2	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	566.	us/cm	1	
	Sulphate as SO4	22.	mg/L	2	
	Alkalinity CaCO3	257.	mg/L	1	
	Chloride as Cl	34.	mg/L	1	
	Colour	6.	TCU	5	
	Silica, Reactive as SiO2	8.41	mg/L	0.02	
	Calculated Hardness CaCO3	291.	mg/L	In Progress	
	Turbidity	54.3	NTU	0.1	
	Bicarbonate as HCO3	256.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	6.76	meq/L	In Progress	
	Total Anions	6.56	meq/L	In Progress	
	Ion Balance	1.56	% diff.	In Progress	
	Calculated T.D.S.	340.	mg/L	In Progress	
	Calculated Conductivity	637.	us/cm	In Progress	
	Saturation pH @4C	7.61	pH units	In Progress	
	Saturation pH @20C	7.21	pH units	In Progress	
	Langelier Index @4C	0.07		In Progress	
	Langelier Index @20C	0.47		In Progress	
00-A023570	Sample Description: MW00-19D		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.15	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000

Attention: MR. DAN BROWN/ MR. BRAD BENSON
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

00-A023570   Sample Description: MW00-19D   Date & Time Sampled: 29-Aug-2000

Sample #	Test	Result	Units	EQL	Comment
00-A023570	Barium Ba	0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	71.5	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.06	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	27.3	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.75	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	20.8	mg/L	0.5	
	Strontium Sr	0.54	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.08	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London Reported: 1-Sep-2000

Attention: MR. DAN BROWN/ MR. BRAD BENSON
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023571	Sample Description: MW00-20D		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.53	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.22	mg/L	0.05	
	Nitrate as N	4.84	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	4.84	mg/L	0.1	
	Carbon. Diss. Org. as C	1.1	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1240	us/cm	1	
	Sulphate as SO4	37.	mg/L	2	
	Alkalinity CaCO3	317.	mg/L	1	
	Chloride as Cl	192.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	8.98	mg/L	0.02	
	Calculated Hardness CaCO3	448.	mg/L	In Progress	
	Turbidity	32.3	NTU	0.1	
	Bicarbonate as HCO3	316.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	14.01	meq/L	In Progress	
	Total Anions	12.87	meq/L	In Progress	
	Ion Balance	4.24	% diff.	In Progress	
	Calculated T.D.S.	723.	mg/L	In Progress	
	Calculated Conductivity	1445.	us/cm	In Progress	
	Saturation pH @4C	7.33	pH units	In Progress	
	Saturation pH @20C	6.93	pH units	In Progress	
	Langelier Index @4C	0.20		In Progress	
	Langelier Index @20C	0.60		In Progress	
00-A023571	Sample Description: MW00-20D		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.13	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000

Attention: MR. DAN BROWN/ MR. BRAD BENSON
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023571	Sample Description: MW00-20D				Date & Time Sampled: 29-Aug-2000
	Barium Ba	0.09	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	119.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	0.13	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	36.6	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.88	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	114.	mg/L	0.5	
	Strontium Sr	0.52	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.12	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000   Page: 27

Attention: MR. DAN BROWN/ MR. BRAD BENSON
Client Reference: 001-3105
Work Order: 71567

Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023572	Sample Description: MW00-20S		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.48	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.18	mg/L	0.05	
	Nitrate as N	5.30	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	5.30	mg/L	0.1	
	Carbon, Diss. Org. as C	1.3	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1220	us/cm	1	
	Sulphate as SO4	33.	mg/L	2	
	Alkalinity CaCO3	319.	mg/L	1	
	Chloride as Cl	217.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.59	mg/L	0.02	
	Calculated Hardness CaCO3	463.	mg/L	In Progress	
	Turbidity	28.2	NTU	0.1	
	Bicarbonate as HCO3	318.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	13.95	meq/L	In Progress	
	Total Anions	13.56	meq/L	In Progress	
	Ion Balance	1.42	% diff.	In Progress	
	Calculated T.D.S.	743.	mg/L	In Progress	
	Calculated Conductivity	1499.	us/cm	In Progress	
	Saturation pH @4C	7.31	pH units	In Progress	
	Saturation pH @20C	6.91	pH units	In Progress	
	Langelier Index @4C	0.17		In Progress	
	Langelier Index @20C	0.57		In Progress	
00-A023572	Sample Description: MW00-20S		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.09	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported: 1-Sep-2000

Attention:	MR. DAN BROWN/ MR. BRAD BENSON	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023572	Sample Description: MW00-20S		Date & Time Sampled: 29-Aug-2000		
	Barium Ba	0.09	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	124.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	37.3	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.33	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	106.	mg/L	0.5	
	Strontium Sr	0.65	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.11	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London   Reported: 1-Sep-2000

Attention: MR. DAN BROWN/ MR. BRAD BENSON
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023573	Sample Description: MW00-22		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.50	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.28	mg/L	0.05	
	Nitrate as N	0.15	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	0.15	mg/L	0.1	
	Carbon. Diss. Org. as C	3.1	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	865.	us/cm	1	
	Sulphate as SO4	37.	mg/L	2	
	Alkalinity CaCO3	398.	mg/L	1	
	Chloride as Cl	55.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	7.68	mg/L	0.02	
	Calculated Hardness CaCO3	406.	mg/L	In Progress	
	Turbidity	30.6	NTU	0.1	
	Bicarbonate as HCO3	397.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	11.00	meq/L	In Progress	
	Total Anions	10.29	meq/L	In Progress	
	Ion Balance	3.35	% diff.	In Progress	
	Calculated T.D.S.	550.	mg/L	In Progress	
	Calculated Conductivity	1028.	us/cm	In Progress	
	Saturation pH @4C	7.24	pH units	In Progress	
	Saturation pH @20C	6.84	pH units	In Progress	
	Langelier Index @4C	0.26		In Progress	
	Langelier Index @20C	0.66		In Progress	
00-A023573	Sample Description: MW00-22		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.43	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London | Reported: 1-Sep-2000 |

Attention:	MR. DAN BROWN/ MR. BRAD BENSON	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023573	Sample Description: MW00-22		Date & Time Sampled: 29-Aug-2000		
	Barium Ba	0.06	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	114.	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	0.38	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	29.5	mg/L	0.02	
	Manganese Mn	0.03	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.51	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	64.9	mg/L	0.5	
	Strontium Sr	0.20	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.18	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

GOLDER ASSOCIATES
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Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000   Page: 1

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71547
Purchase Order:
Date Received: 29-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023285	Sample Description: MW00-9d			Date & Time Sampled: 28-Aug-2000	
	pH Value	7.31	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.24	mg/L	0.05	
	Nitrate as N	< 0.1	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	< 0.1	mg/L	0.1	
	Carbon, Diss. Org. as C	< 0.5	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1970	us/cm	1	
	Sulphate as SO4	In Progress	mg/L	2	
	Alkalinity CaCO3	191.	mg/L	1	
	Chloride as Cl	3.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	9.26	mg/L	0.02	
	Calculated Hardness CaCO3	1670	mg/L	In Progress	
	Turbidity	18.7	NTU	0.1	
	Bicarbonate as HCO3	191.	mg/L	In Progress	
	Carbonate CO3	0.	mg/L	In Progress	
	Total Cation	33.62	meq/L	In Progress	
	Total Anions	In Progress	meq/L	In Progress	
	Ion Balance	In Progress	% diff.	In Progress	
	Calculated T.D.S.	In Progress	mg/L	In Progress	
	Calculated Conductivity	1885.	us/cm	In Progress	
	Saturation pH @4C	In Progress	pH units	In Progress	
	Saturation pH @20C	In Progress	pH units	In Progress	
	Langelier Index @4C	In Progress		In Progress	
	Langelier Index @20C	In Progress		In Progress	
00-A023285	Sample Description: MW00-9d			Date & Time Sampled: 28-Aug-2000	
	Aluminum Al	1.24	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London

Reported:31-Aug-2000

Attention: MR. DAN BROWN

Client Reference: 001-3105

Work Order: 71547

Purchase Order:

Date Received: 29-Aug-2000

Sample Type: Liquid

00-A023285 Sample Description: MW00-9d

Date & Time Sampled: 28-Aug-2000

Sample #	Test	Result	Units	EQL	Comment
00-A023285	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.18	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	588.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	2.58	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	49.4	mg/L	0.02	
	Manganese Mn	0.09	mg/L	0.02	
	Molybdenum Mo	0.03	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.04	mg/L	0.02	
	Potassium K	2.61	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	3.28	mg/L	0.5	
	Strontium Sr	14.3	mg/L	0.02	
	Tin Sn	0.08	mg/L	0.07	
	Titanium Ti	0.03	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.01	mg/L	0.01	

EXPLANATION OF CODES

EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London Reported:31-Aug-2000 Page: 3

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	29-Aug-2000
Work Order:	71547	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023286	Sample Description: MW00-10s		Date & Time Sampled: 28-Aug-2000		
	pH Value	7.40	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.37	mg/L	0.05	
	Nitrate as N	3.60	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	3.60	mg/L	0.1	
	Carbon. Diss. Org. as C	1.9	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	901.	us/cm	1	
	Sulphate as SO4	In Progress	mg/L	2	
	Alkalinity CaCO3	358.	mg/L	1	
	Chloride as Cl	15.	mg/L	1	
	Colour	6.	TCU	5	
	Silica. Reactive as SiO2	10.4	mg/L	0.02	
	Calculated Hardness CaCO3	544.	mg/L	In Progress	
	Turbidity	45.5	NTU	0.1	
	Bicarbonate as HCO3	357.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	11.68	meq/L	In Progress	
	Total Anions	In Progress	meq/L	In Progress	
	Ion Balance	In Progress	% diff.	In Progress	
	Calculated T.D.S.	In Progress	mg/L	In Progress	
	Calculated Conductivity	881.	us/cm	In Progress	
	Saturation pH @4C	In Progress	pH units	In Progress	
	Saturation pH @20C	In Progress	pH units	In Progress	
	Langelier Index @4C	In Progress		In Progress	
	Langelier Index @20C	In Progress		In Progress	
00-A023286	Sample Description: MW00-10s		Date & Time Sampled: 28-Aug-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

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CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000   Page: 4

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	29-Aug-2000
Work Order:	71547	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023286	Sample Description: MW00-10s				Date & Time Sampled: 28-Aug-2000
	Barium Ba	0.18	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.27	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	154.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.03	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	38.7	mg/L	0.02	
	Manganese Mn	0.06	mg/L	0.02	
	Molybdenum Mo	0.03	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.95	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	16.3	mg/L	0.5	
	Strontium Sr	1.73	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.47	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London   Reported:31-Aug-2000   Page: 5

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	29-Aug-2000
Work Order:	71547	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023287	Sample Description: MW00-10d				Date & Time Sampled: 28-Aug-2000
	pH Value	7.91	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.26	mg/L	0.05	
	Nitrate as N	1.44	mg/L	0.1	
	Nitrite as N	0.07	mg/L	0.02	
	Nitrate + Nitrite as N	1.51	mg/L	0.1	
	Carbon, Diss. Org. as C	1.4	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1360	us/cm	1	
	Sulphate as SO4	In Progress	mg/L	2	
	Alkalinity CaCO3	168.	mg/L	1	
	Chloride as Cl	9.	mg/L	1	
	Colour	6.	TCU	5	
	Silica, Reactive as SiO2	10.5	mg/L	0.02	
	Calculated Hardness CaCO3	941.	mg/L	In Progress	
	Turbidity	69.1	NTU	0.1	
	Bicarbonate as HCO3	167.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	19.41	meq/L	In Progress	
	Total Anions	In Progress	meq/L	In Progress	
	Ion Balance	In Progress	% diff.	In Progress	
	Calculated T.D.S.	In Progress	mg/L	In Progress	
	Calculated Conductivity	1130.	us/cm	In Progress	
	Saturation pH @4C	In Progress	pH units	In Progress	
	Saturation pH @20C	In Progress	pH units	In Progress	
	Langelier Index @4C	In Progress		In Progress	
	Langelier Index @20C	In Progress		In Progress	
00-A023287	Sample Description: MW00-10d				Date & Time Sampled: 28-Aug-2000
	Aluminum Al	0.94	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000   Page: 6

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	29-Aug-2000
Work Order:	71547	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023287	Sample Description: MW00-10d				Date & Time Sampled: 28-Aug-2000
	Barium Ba	0.10	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.07	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	287.	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	1.01	mg/L	0.02	
	Lead Pb	0.003	mg/L	0.001	
	Magnesium Mg	54.5	mg/L	0.02	
	Manganese Mn	0.04	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.08	mg/L	0.02	
	Potassium K	7.67	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	9.44	mg/L	0.5	
	Strontium Sr	3.82	mg/L	0.02	
	Tin Sn	0.07	mg/L	0.07	
	Titanium Ti	0.04	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.06	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

GOLDER ASSOCIATES
SEP - 1 2000
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Client:(1093) Golder Associates Ltd. (London), London Reported:31-Aug-2000 Page: 1

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023559	Sample Description: MW00-4S		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.54	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.43	mg/L	0.05	
	Nitrate as N	6.47	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	6.47	mg/L	0.1	
	Carbon. Diss. Org. as C	0.7	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	583.	us/cm	1	
	Sulphate as SO4	20.	mg/L	2	
	Alkalinity CaCO3	286.	mg/L	1	
	Chloride as Cl	In Progress	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	8.68	mg/L	0.02	
	Calculated Hardness CaCO3	342.	mg/L	In Progress	
	Turbidity	31.5	NTU	0.1	
	Bicarbonate as HCO3	285.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	7.32	meq/L	In Progress	
	Total Anions	In Progress	meq/L	In Progress	
	Ion Balance	In Progress	% diff.	In Progress	
	Calculated T.D.S.	In Progress	mg/L	In Progress	
	Calculated Conductivity	614.	us/cm	In Progress	
	Saturation pH @4C	In Progress	pH units	In Progress	
	Saturation pH @20C	In Progress	pH units	In Progress	
	Langelier Index @4C	In Progress		In Progress	
	Langelier Index @20C	In Progress		In Progress	
00-A023559	Sample Description: MW00-4S		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.86	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023559	Sample Description: MW00-45		Date & Time Sampled: 29-Aug-2000		
	Barium Ba	0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.03	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	82.4	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.59	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	33.0	mg/L	0.02	
	Manganese Mn	0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.79	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	10.3	mg/L	0.5	
	Strontium Sr	0.22	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London Reported:31-Aug-2000 Page: 3

Attention: MR. DAN BROWN	Purchase Order:
Client Reference: 001-3105	Date Received: 30-Aug-2000
Work Order: 71567	Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023560	Sample Description: MW00-4D		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.85	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.31	mg/L	0.05	
	Nitrate as N	3.59	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	3.59	mg/L	0.1	
	Carbon. Diss. Org. as C	0.8	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1010	us/cm	1	
	Sulphate as SO4	398.	mg/L	2	
	Alkalinity CaCO3	236.	mg/L	1	
	Chloride as Cl	In Progress	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	15.3	mg/L	0.02	
	Calculated Hardness CaCO3	642.	mg/L	In Progress	
	Turbidity	25.7	NTU	0.1	
	Bicarbonate as HCO3	234.	mg/L	In Progress	
	Carbonate CO3	2.	mg/L	In Progress	
	Total Cation	13.31	meq/L	In Progress	
	Total Anions	In Progress	meq/L	In Progress	
	Ion Balance	In Progress	% diff.	In Progress	
	Calculated T.D.S.	In Progress	mg/L	In Progress	
	Calculated Conductivity	1463.	us/cm	In Progress	
	Saturation pH @4C	In Progress	pH units	In Progress	
	Saturation pH @20C	In Progress	pH units	In Progress	
	Langelier Index @4C	In Progress		In Progress	
	Langelier Index @20C	In Progress		In Progress	
00-A023560	Sample Description: MW00-4D		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.30	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000   Page: 4

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023560	Sample Description: MW00-4D				Date & Time Sampled: 29-Aug-2000
	Barium Ba	0.15	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.64	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	193.	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.17	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	38.8	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	0.03	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.44	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	9.78	mg/L	0.5	
	Strontium Sr	2.48	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.27	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000   Page: 5

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023561	Sample Description: MW00-9S		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.54	pH units	0.1	
	Ammonia as N	0.09	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.43	mg/L	0.05	
	Nitrate as N	< 0.1	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	< 0.1	mg/L	0.1	
	Carbon, Diss. Org. as C	2.6	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1600	us/cm	1	
	Sulphate as SO4	639.	mg/L	2	
	Alkalinity CaCO3	365.	mg/L	1	
	Chloride as Cl	In Progress	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	16.2	mg/L	0.02	
	Calculated Hardness CaCO3	966.	mg/L	In Progress	
	Turbidity	23.6	NTU	0.1	
	Bicarbonate as HCO3	364.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	22.53	meq/L	In Progress	
	Total Anions	In Progress	meq/L	In Progress	
	Ion Balance	In Progress	% diff.	In Progress	
	Calculated T.D.S.	In Progress	mg/L	In Progress	
	Calculated Conductivity	2342.	us/cm	In Progress	
	Saturation pH @4C	In Progress	pH units	In Progress	
	Saturation pH @20C	In Progress	pH units	In Progress	
	Langelier Index @4C	In Progress		In Progress	
	Langelier Index @20C	In Progress		In Progress	
00-A023561	Sample Description: MW00-9S		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023561	Sample Description: MW00-9S				Date & Time Sampled: 29-Aug-2000
	Barium Ba	0.10	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.36	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	202.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.16	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	112.	mg/L	0.02	
	Manganese Mn	0.27	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	14.1	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	65.9	mg/L	0.5	
	Strontium Sr	3.87	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.09	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000   Page: 7

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023562	Sample Description: MW00-11S		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.48	pH units	0.1	
	Ammonia as N	0.16	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.75	mg/L	0.05	
	Nitrate as N	5.95	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	5.95	mg/L	0.1	
	Carbon, Diss. Org. as C	1.9	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	502.	us/cm	1	
	Sulphate as SO4	25.	mg/L	2	
	Alkalinity CaCO3	227.	mg/L	1	
	Chloride as Cl	In Progress	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	11.9	mg/L	0.02	
	Calculated Hardness CaCO3	258.	mg/L	In Progress	
	Turbidity	32.2	NTU	0.1	
	Bicarbonate as HCO3	226.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	6.16	meq/L	In Progress	
	Total Anions	In Progress	meq/L	In Progress	
	Ion Balance	In Progress	% diff.	In Progress	
	Calculated T.D.S.	In Progress	mg/L	In Progress	
	Calculated Conductivity	518.	us/cm	In Progress	
	Saturation pH @4C	In Progress	pH units	In Progress	
	Saturation pH @20C	In Progress	pH units	In Progress	
	Langelier Index @4C	In Progress		In Progress	
	Langelier Index @20C	In Progress		In Progress	
00-A023562	Sample Description: MW00-11S		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.62	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023562	Sample Description: MW00-11S		Date & Time Sampled: 29-Aug-2000		
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.05	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	68.3	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	0.44	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	21.2	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.39	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	21.0	mg/L	0.5	
	Strontium Sr	0.26	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000   Page: 9

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023563	Sample Description: MW00-11D		Date & Time Sampled: 29-Aug-2000		
	pH Value	8.17	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.21	mg/L	0.05	
	Nitrate as N	3.14	mg/L	0.1	
	Nitrite as N	0.04	mg/L	0.02	
	Nitrate + Nitrite as N	3.18	mg/L	0.1	
	Carbon. Diss. Org. as C	0.8	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	603.	us/cm	1	
	Sulphate as SO4	25.	mg/L	2	
	Alkalinity CaCO3	287.	mg/L	1	
	Chloride as Cl	In Progress	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.86	mg/L	0.02	
	Calculated Hardness CaCO3	341.	mg/L	In Progress	
	Turbidity	3.36	NTU	0.1	
	Bicarbonate as HCO3	283.	mg/L	In Progress	
	Carbonate CO3	4.	mg/L	In Progress	
	Total Cation	7.40	meq/L	In Progress	
	Total Anions	In Progress	meq/L	In Progress	
	Ion Balance	In Progress	% diff.	In Progress	
	Calculated T.D.S.	In Progress	mg/L	In Progress	
	Calculated Conductivity	623.	us/cm	In Progress	
	Saturation pH @4C	In Progress	pH units	In Progress	
	Saturation pH @20C	In Progress	pH units	In Progress	
	Langelier Index @4C	In Progress		In Progress	
	Langelier Index @20C	In Progress		In Progress	
00-A023563	Sample Description: MW00-11D		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.21	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023563	Sample Description: MW00-11D				Date & Time Sampled: 29-Aug-2000
	Barium Ba	0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	85.1	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.04	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	31.1	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.54	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	12.1	mg/L	0.5	
	Strontium Sr	1.33	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:31-Aug-2000 Page: 11

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71567

Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023564	Sample Description: MW00-12D		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.08	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	2.68	mg/L	0.05	
	Nitrate as N	8.95	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	8.95	mg/L	0.1	
	Carbon, Diss. Org. as C	9.8	mg/L	0.5	
	Phosphorus,Diss.Orth as P	0.12	mg/L	0.01	
	Conductivity	1180	us/cm	1	
	Sulphate as SO4	28.	mg/L	2	
	Alkalinity CaCO3	520.	mg/L	1	
	Chloride as Cl	In Progress	mg/L	1	
	Colour	56.	TCU	5	
	Silica, Reactive as SiO2	8.83	mg/L	0.02	
	Calculated Hardness CaCO3	520.	mg/L	In Progress	
	Turbidity	11.1	NTU	0.1	
	Bicarbonate as HCO3	519.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	13.89	meq/L	In Progress	
	Total Anions	In Progress	meq/L	In Progress	
	Ion Balance	In Progress	% diff.	In Progress	
	Calculated T.D.S.	In Progress	mg/L	In Progress	
	Calculated Conductivity	995.	us/cm	In Progress	
	Saturation pH @4C	In Progress	pH units	In Progress	
	Saturation pH @20C	In Progress	pH units	In Progress	
	Langelier Index @4C	In Progress		In Progress	
	Langelier Index @20C	In Progress		In Progress	
00-A023564	Sample Description: MW00-12D		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.20	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:31-Aug-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023564	Sample Description: MW00-12D		Date & Time Sampled: 29-Aug-2000		
	Barium Ba	0.07	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.09	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	137.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.02	mg/L	0.01	
	Iron Fe	0.14	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	43.2	mg/L	0.02	
	Manganese Mn	0.20	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.33	mg/L	0.02	
	Potassium K	101.	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	20.9	mg/L	0.5	
	Strontium Sr	0.55	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.07	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000   Page: 13

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023565	Sample Description: MW00-17S		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.42	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.20	mg/L	0.05	
	Nitrate as N	3.64	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	3.64	mg/L	0.1	
	Carbon, Diss. Org. as C	0.7	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1240	us/cm	1	
	Sulphate as SO4	20.	mg/L	2	
	Alkalinity CaCO3	338.	mg/L	1	
	Chloride as Cl	In Progress	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	8.47	mg/L	0.02	
	Calculated Hardness CaCO3	429.	mg/L	In Progress	
	Turbidity	31.5	NTU	0.1	
	Bicarbonate as HCO3	337.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	14.02	meq/L	In Progress	
	Total Anions	In Progress	meq/L	In Progress	
	Ion Balance	In Progress	% diff.	In Progress	
	Calculated T.D.S.	In Progress	mg/L	In Progress	
	Calculated Conductivity	972.	us/cm	In Progress	
	Saturation pH @4C	In Progress	pH units	In Progress	
	Saturation pH @20C	In Progress	pH units	In Progress	
	Langelier Index @4C	In Progress		In Progress	
	Langelier Index @20C	In Progress		In Progress	
00-A023565	Sample Description: MW00-17S		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.14	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000   Page: 14

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023565	Sample Description: MW00-17S		Date & Time Sampled: 29-Aug-2000		
	Barium Ba	0.08	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.03	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	114.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.16	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	35.1	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.74	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	123.	mg/L	0.5	
	Strontium Sr	0.34	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.09	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London   Reported:31-Aug-2000   Page: 15

Attention: MR. DAN BROWN	Purchase Order:
Client Reference: 001-3105	Date Received: 30-Aug-2000
Work Order: 71567	Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023566	Sample Description: MW00-17D		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.40	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.16	mg/L	0.05	
	Nitrate as N	2.31	mg/L	0.1	
	Nitrite as N	0.02	mg/L	0.02	
	Nitrate + Nitrite as N	2.33	mg/L	0.1	
	Carbon. Diss. Org. as C	1.3	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1400	us/cm	1	
	Sulphate as SO4	17.	mg/L	2	
	Alkalinity CaCO3	332.	mg/L	1	
	Chloride as Cl	In Progress	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	7.31	mg/L	0.02	
	Calculated Hardness CaCO3	435.	mg/L	In Progress	
	Turbidity	11.1	NTU	0.1	
	Bicarbonate as HCO3	331.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	15.48	meq/L	In Progress	
	Total Anions	In Progress	meq/L	In Progress	
	Ion Balance	In Progress	% diff.	In Progress	
	Calculated T.D.S.	In Progress	mg/L	In Progress	
	Calculated Conductivity	1031.	us/cm	In Progress	
	Saturation pH @4C	In Progress	pH units	In Progress	
	Saturation pH @20C	In Progress	pH units	In Progress	
	Langelier Index @4C	In Progress		In Progress	
	Langelier Index @20C	In Progress		In Progress	
00-A023566	Sample Description: MW00-17D		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.07	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London   Reported:31-Aug-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023566	Sample Description: MW00-17D				Date & Time Sampled: 29-Aug-2000
	Barium Ba	0.07	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	1.24	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	119.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	33.5	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	4.86	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	153.	mg/L	0.5	
	Strontium Sr	0.33	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.06	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London　　Reported:31-Aug-2000　　Page: 17

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023567	Sample Description: MW00-18S				Date & Time Sampled: 29-Aug-2000
	pH Value	7.54	pH units	0.1	
	Ammonia as N	0.10	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.15	mg/L	0.05	
	Nitrate as N	< 0.1	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	< 0.1	mg/L	0.1	
	Carbon, Diss. Org. as C	1.6	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	734.	us/cm	1	
	Sulphate as SO4	105.	mg/L	2	
	Alkalinity CaCO3	322.	mg/L	1	
	Chloride as Cl	In Progress	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	11.3	mg/L	0.02	
	Calculated Hardness CaCO3	441.	mg/L	In Progress	
	Turbidity	56.5	NTU	0.1	
	Bicarbonate as HCO3	321.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	9.53	meq/L	In Progress	
	Total Anions	In Progress	meq/L	In Progress	
	Ion Balance	In Progress	% diff.	In Progress	
	Calculated T.D.S.	In Progress	mg/L	In Progress	
	Calculated Conductivity	868.	us/cm	In Progress	
	Saturation pH @4C	In Progress	pH units	In Progress	
	Saturation pH @20C	In Progress	pH units	In Progress	
	Langelier Index @4C	In Progress		In Progress	
	Langelier Index @20C	In Progress		In Progress	
00-A023567	Sample Description: MW00-18S				Date & Time Sampled: 29-Aug-2000
	Aluminum Al	0.22	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:31-Aug-2000 Page: 18

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023567	Sample Description: MW00-18S		Date & Time Sampled: 29-Aug-2000		
	Barium Ba	0.07	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.03	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	108.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.16	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	41.5	mg/L	0.02	
	Manganese Mn	0.03	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.14	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	15.3	mg/L	0.5	
	Strontium Sr	1.74	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.06	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023568	Sample Description: MW00-18D		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.58	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.11	mg/L	0.05	
	Nitrate as N	0.77	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	0.77	mg/L	0.1	
	Carbon, Diss. Org. as C	0.5	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	627.	us/cm	1	
	Sulphate as SO4	47.	mg/L	2	
	Alkalinity CaCO3	321.	mg/L	1	
	Chloride as Cl	In Progress	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	10.3	mg/L	0.02	
	Calculated Hardness CaCO3	394.	mg/L	In Progress	
	Turbidity	40.3	NTU	0.1	
	Bicarbonate as HCO3	320.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	8.12	meq/L	In Progress	
	Total Anions	In Progress	meq/L	In Progress	
	Ion Balance	In Progress	% diff.	In Progress	
	Calculated T.D.S.	In Progress	mg/L	In Progress	
	Calculated Conductivity	709.	us/cm	In Progress	
	Saturation pH @4C	In Progress	pH units	In Progress	
	Saturation pH @20C	In Progress	pH units	In Progress	
	Langelier Index @4C	In Progress		In Progress	
	Langelier Index @20C	In Progress		In Progress	
00-A023568	Sample Description: MW00-18D		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.27	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London Reported:31-Aug-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71667
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023568	Sample Description: MW00-18D				Date & Time Sampled: 29-Aug-2000
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	97.3	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.09	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	36.8	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.27	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	4.08	mg/L	0.5	
	Strontium Sr	1.21	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.06	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000

Attention:	MR. DAN BROWN/ MR. BRAD BENSON	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023569	Sample Description: MW00-19S		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.76	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.21	mg/L	0.05	
	Nitrate as N	< 0.1	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	< 0.1	mg/L	0.1	
	Carbon, Diss. Org. as C	1.3	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	673.	us/cm	1	
	Sulphate as SO4	34.	mg/L	2	
	Alkalinity CaCO3	295.	mg/L	1	
	Chloride as Cl	In Progress	mg/L	1	
	Colour	6.	TCU	5	
	Silica, Reactive as SiO2	9.10	mg/L	0.02	
	Calculated Hardness CaCO3	360.	mg/L	In Progress	
	Turbidity	40.1	NTU	0.1	
	Bicarbonate as HCO3	293.	mg/L	In Progress	
	Carbonate CO3	2.	mg/L	In Progress	
	Total Cation	8.41	meq/L	In Progress	
	Total Anions	In Progress	meq/L	In Progress	
	Ion Balance	In Progress	% diff.	In Progress	
	Calculated T.D.S.	In Progress	mg/L	In Progress	
	Calculated Conductivity	687.	us/cm	In Progress	
	Saturation pH @4C	In Progress	pH units	In Progress	
	Saturation pH @20C	In Progress	pH units	In Progress	
	Langelier Index @4C	In Progress		In Progress	
	Langelier Index @20C	In Progress		In Progress	
00-A023569	Sample Description: MW00-19S		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.43	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London
Reported:31-Aug-2000

Attention: MR. DAN BROWN/ MR. BRAD BENSON
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023569	Sample Description: MW00-19S Date & Time Sampled: 29-Aug-2000				
	Barium Ba	0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.03	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	87.6	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	0.40	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	34.3	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.98	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	26.8	mg/L	0.5	
	Strontium Sr	0.47	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.18	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000   Page: 23

Attention: MR. DAN BROWN/ MR. BRAD BENSON
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023570	Sample Description: MW00-19D				Date & Time Sampled: 29-Aug-2000
	pH Value	7.68	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.16	mg/L	0.05	
	Nitrate as N	< 0.1	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	< 0.1	mg/L	0.1	
	Carbon. Diss. Org. as C	1.2	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	566.	us/cm	1	
	Sulphate as SO4	22.	mg/L	2	
	Alkalinity CaCO3	257.	mg/L	1	
	Chloride as Cl	In Progress	mg/L	1	
	Colour	6.	TCU	5	
	Silica. Reactive as SiO2	8.41	mg/L	0.02	
	Calculated Hardness CaCO3	291.	mg/L	In Progress	
	Turbidity	54.3	NTU	0.1	
	Bicarbonate as HCO3	256.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	6.76	meq/L	In Progress	
	Total Anions	In Progress	meq/L	In Progress	
	Ion Balance	In Progress	% diff.	In Progress	
	Calculated T.D.S.	In Progress	mg/L	In Progress	
	Calculated Conductivity	556.	us/cm	In Progress	
	Saturation pH @4C	In Progress	pH units	In Progress	
	Saturation pH @20C	In Progress	pH units	In Progress	
	Langelier Index @4C	In Progress		In Progress	
	Langelier Index @20C	In Progress		In Progress	
00-A023570	Sample Description: MW00-19D				Date & Time Sampled: 29-Aug-2000
	Aluminum Al	0.15	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:31-Aug-2000

Attention: MR. DAN BROWN/ MR. BRAD BENSON
Purchase Order:
Client Reference: 001-3105
Date Received: 30-Aug-2000
Work Order: 71567
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023570	Sample Description: MW00-19D			Date & Time Sampled: 29-Aug-2000	
	Barium Ba	0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	71.5	mg/L	0.15	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.06	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	27.3	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.75	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	20.8	mg/L	0.5	
	Strontium Sr	0.54	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.08	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London   Reported:31-Aug-2000   Page: 25

Attention: MR. DAN BROWN/ MR. BRAD BENSON   Purchase Order:
Client Reference: 001-3105   Date Received: 30-Aug-2000
Work Order: 71567   Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023571	Sample Description: MW00-20D				Date & Time Sampled: 29-Aug-2000
	pH Value	7.53	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.22	mg/L	0.05	
	Nitrate as N	4.84	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	4.84	mg/L	0.1	
	Carbon. Diss. Org. as C	1.1	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1240	us/cm	1	
	Sulphate as SO4	37.	mg/L	2	
	Alkalinity CaCO3	317.	mg/L	1	
	Chloride as Cl	In Progress	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	8.98	mg/L	0.02	
	Calculated Hardness CaCO3	448.	mg/L	In Progress	
	Turbidity	32.3	NTU	0.1	
	Bicarbonate as HCO3	316.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	14.01	meq/L	In Progress	
	Total Anions	In Progress	meq/L	In Progress	
	Ion Balance	In Progress	% diff.	In Progress	
	Calculated T.D.S.	In Progress	mg/L	In Progress	
	Calculated Conductivity	985.	us/cm	In Progress	
	Saturation pH @4C	In Progress	pH units	In Progress	
	Saturation pH @20C	In Progress	pH units	In Progress	
	Langelier Index @4C	In Progress		In Progress	
	Langelier Index @20C	In Progress		In Progress	
00-A023571	Sample Description: MW00-20D				Date & Time Sampled: 29-Aug-2000
	Aluminum Al	0.13	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000   Page: 26

Attention:	MR. DAN BROWN/ MR. BRAD BENSON	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023571	Sample Description: MW00-20D		Date & Time Sampled: 29-Aug-2000		
	Barium Ba	0.09	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	119.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	0.13	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	36.6	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.88	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	114.	mg/L	0.5	
	Strontium Sr	0.52	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.12	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London

Reported:31-Aug-2000

Attention:	MR. DAN BROWN/ MR. BRAD BENSON	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023572	Sample Description: MW00-20S		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.48	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.18	mg/L	0.05	
	Nitrate as N	5.30	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	5.30	mg/L	0.1	
	Carbon. Diss. Org. as C	1.3	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	1220	us/cm	1	
	Sulphate as SO4	33.	mg/L	2	
	Alkalinity CaCO3	319.	mg/L	1	
	Chloride as Cl	In Progress	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	7.59	mg/L	0.02	
	Calculated Hardness CaCO3	463.	mg/L	In Progress	
	Turbidity	28.2	NTU	0.1	
	Bicarbonate as HCO3	318.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	13.95	meq/L	In Progress	
	Total Anions	In Progress	meq/L	In Progress	
	Ion Balance	In Progress	% diff.	In Progress	
	Calculated T.D.S.	In Progress	mg/L	In Progress	
	Calculated Conductivity	978.	us/cm	In Progress	
	Saturation pH @4C	In Progress	pH units	In Progress	
	Saturation pH @20C	In Progress	pH units	In Progress	
	Langelier Index @4C	In Progress		In Progress	
	Langelier Index @20C	In Progress		In Progress	
00-A023572	Sample Description: MW00-20S		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.09	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

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Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:31-Aug-2000 Page: 28

Attention: MR. DAN BROWN/ MR. BRAD BENSON	Purchase Order:
Client Reference: 001-3105	Date Received: 30-Aug-2000
Work Order: 71567	Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023572	Sample Description: MW00-20S		Date & Time Sampled: 29-Aug-2000		
	Barium Ba	0.09	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	124.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	< 0.001	mg/L	0.001	
	Magnesium Mg	37.3	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.33	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	106.	mg/L	0.5	
	Strontium Sr	0.65	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.11	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:31-Aug-2000   Page: 29

Attention:	MR. DAN BROWN/ MR. BRAD BENSON	Purchase Order:	
Client Reference:	001-3105	Date Received:	30-Aug-2000
Work Order:	71567	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023573	Sample Description: MW00-22		Date & Time Sampled: 29-Aug-2000		
	pH Value	7.50	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.28	mg/L	0.05	
	Nitrate as N	0.15	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	0.15	mg/L	0.1	
	Carbon, Diss. Org. as C	3.1	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	865.	us/cm	1	
	Sulphate as SO4	37.	mg/L	2	
	Alkalinity CaCO3	398.	mg/L	1	
	Chloride as Cl	In Progress	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.68	mg/L	0.02	
	Calculated Hardness CaCO3	406.	mg/L	In Progress	
	Turbidity	30.6	NTU	0.1	
	Bicarbonate as HCO3	397.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	11.00	meq/L	In Progress	
	Total Anions	In Progress	meq/L	In Progress	
	Ion Balance	In Progress	% diff.	In Progress	
	Calculated T.D.S.	In Progress	mg/L	In Progress	
	Calculated Conductivity	896.	us/cm	In Progress	
	Saturation pH @4C	In Progress	pH units	In Progress	
	Saturation pH @20C	In Progress	pH units	In Progress	
	Langelier Index @4C	In Progress		In Progress	
	Langelier Index @20C	In Progress		In Progress	
00-A023573	Sample Description: MW00-22		Date & Time Sampled: 29-Aug-2000		
	Aluminum Al	0.43	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:31-Aug-2000

Attention: MR. DAN BROWN/ MR. BRAD BENSON
Client Reference: 001-3105
Work Order: 71567
Purchase Order:
Date Received: 30-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023573	Sample Description: MW00-22		Date & Time Sampled: 29-Aug-2000		
	Barium Ba	0.06	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	114.	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	0.38	mg/L	0.02	
	Lead Pb	In Progress	mg/L	0.001	
	Magnesium Mg	29.5	mg/L	0.02	
	Manganese Mn	0.03	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.51	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	64.9	mg/L	0.5	
	Strontium Sr	0.20	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.18	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

GOLDER ASSOCIATES
AUG 30 2000
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Client:(1093) Golder Associates Ltd. (London), London

Reported:30-Aug-2000 Page: 1

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023228	Sample Description: MW00-1s		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.55	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.10	mg/L	0.05	
	Nitrate as N	7.61	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	7.61	mg/L	0.1	
	Carbon, Diss. Org. as C	0.7	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	675	us/cm	1	
	Sulphate as SO4	12.	mg/L	2	
	Alkalinity CaCO3	290.	mg/L	1	
	Chloride as Cl	45.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.22	mg/L	0.02	
	Calculated Hardness CaCO3	340.	mg/L	In Progress	
	Turbidity	33.0	NTU	0.1	
	Bicarbonate as HCO3	289.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	8.32	meq/L	In Progress	
	Total Anions	7.86	meq/L	In Progress	
	Ion Balance	2.82	% diff.	In Progress	
	Calculated T.D.S.	424.	mg/L	In Progress	
	Calculated Conductivity	758.	us/cm	In Progress	
	Saturation pH @4C	7.50	pH units	In Progress	
	Saturation pH @20C	7.10	pH units	In Progress	
	Langelier Index @4C	0.05		In Progress	
	Langelier Index @20C	0.45		In Progress	
00-A023228	Sample Description: MW00-1s		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	0.35	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London Reported:30-Aug-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023228	Sample Description: MW00-1s		Date & Time Sampled: 26-Aug-2000		
	Barium Ba	0.48	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.13	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	84.1	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.47	mg/L	0.02	
	Lead Pb	In Progress	mg/L	0.001	
	Magnesium Mg	31.5	mg/L	0.02	
	Manganese Mn	0.03	mg/L	0.02	
	Molybdenum Mo	0.04	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.52	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	33.1	mg/L	0.5	
	Strontium Sr	0.39	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.15	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:30-Aug-2000 Page: 3

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023229	Sample Description: MW00-1d		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.55	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.08	mg/L	0.05	
	Nitrate as N	7.52	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	7.52	mg/L	0.1	
	Carbon. Diss. Org. as C	< 0.5	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	585.	us/cm	1	
	Sulphate as SO4	14.	mg/L	2	
	Alkalinity CaCO3	275.	mg/L	1	
	Chloride as Cl	19.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.07	mg/L	0.02	
	Calculated Hardness CaCO3	335.	mg/L	In Progress	
	Turbidity	0.31	NTU	0.1	
	Bicarbonate as HCO3	274.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	7.22	meq/L	In Progress	
	Total Anions	6.86	meq/L	In Progress	
	Ion Balance	2.56	% diff.	In Progress	
	Calculated T.D.S.	366.	mg/L	In Progress	
	Calculated Conductivity	632.	us/cm	In Progress	
	Saturation pH @4C	7.51	pH units	In Progress	
	Saturation pH @20C	7.11	pH units	In Progress	
	Langelier Index @4C	0.04		In Progress	
	Langelier Index @20C	0.44		In Progress	
00-A023229	Sample Description: MW00-1d		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:30-Aug-2000 Page: 4

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023229	Sample Description: MW00-1d		Date & Time Sampled: 26-Aug-2000		
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	84.0	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	In Progress	mg/L	0.001	
	Magnesium Mg	30.3	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	0.03	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.84	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	11.3	mg/L	0.5	
	Strontium Sr	0.15	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.04	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London Reported:30-Aug-2000 Page: 5

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023230	Sample Description: MW00-2s		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.56	pH units	0.1	
	Ammonia as N	0.06	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.22	mg/L	0.05	
	Nitrate as N	6.19	mg/L	0.1	
	Nitrite as N	0.05	mg/L	0.02	
	Nitrate + Nitrite as N	6.24	mg/L	0.1	
	Carbon. Diss. Org. as C	1.6	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	740.	us/cm	1	
	Sulphate as SO4	21.	mg/L	2	
	Alkalinity CaCO3	322.	mg/L	1	
	Chloride as Cl	47.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	7.93	mg/L	0.02	
	Calculated Hardness CaCO3	366.	mg/L	In Progress	
	Turbidity	9.20	NTU	0.1	
	Bicarbonate as HCO3	321.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	9.23	meq/L	In Progress	
	Total Anions	8.65	meq/L	In Progress	
	Ion Balance	3.28	% diff.	In Progress	
	Calculated T.D.S.	472.	mg/L	In Progress	
	Calculated Conductivity	830.	us/cm	In Progress	
	Saturation pH @4C	7.43	pH units	In Progress	
	Saturation pH @20C	7.03	pH units	In Progress	
	Langelier Index @4C	0.13		In Progress	
	Langelier Index @20C	0.53		In Progress	
00-A023230	Sample Description: MW00-2s		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	0.75	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:30-Aug-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023230	Sample Description: MW00-2s		Date & Time Sampled: 26-Aug-2000		
	Barium Ba	0.09	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	89.7	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.71	mg/L	0.02	
	Lead Pb	In Progress	mg/L	0.001	
	Magnesium Mg	34.5	mg/L	0.02	
	Manganese Mn	0.04	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.03	mg/L	0.02	
	Potassium K	16.5	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	34.3	mg/L	0.5	
	Strontium Sr	0.40	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.04	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.08	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London

Reported:30-Aug-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488

Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023231	Sample Description: MW00-2d		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.46	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.31	mg/L	0.05	
	Nitrate as N	6.16	mg/L	0.1	
	Nitrite as N	0.05	mg/L	0.02	
	Nitrate + Nitrite as N	6.21	mg/L	0.1	
	Carbon, Diss. Org. as C	2.2	mg/L	0.5	
	Phosphorus.Diss.Orth as P	0.03	mg/L	0.01	
	Conductivity	730.	us/cm	1	
	Sulphate as SO4	20.	mg/L	2	
	Alkalinity CaCO3	309.	mg/L	1	
	Chloride as Cl	55.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	7.31	mg/L	0.02	
	Calculated Hardness CaCO3	365.	mg/L	In Progress	
	Turbidity	0.48	NTU	0.1	
	Bicarbonate as HCO3	308.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	9.22	meq/L	In Progress	
	Total Anions	8.59	meq/L	In Progress	
	Ion Balance	3.54	% diff.	In Progress	
	Calculated T.D.S.	473.	mg/L	In Progress	
	Calculated Conductivity	827.	us/cm	In Progress	
	Saturation pH @4C	7.43	pH units	In Progress	
	Saturation pH @20C	7.03	pH units	In Progress	
	Langelier Index @4C	0.03		In Progress	
	Langelier Index @20C	0.43		In Progress	
00-A023231	Sample Description: MW00-2d		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:30-Aug-2000   Page: 8

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023231	Sample Description: MW00-2d		Date & Time Sampled: 26-Aug-2000		
	Barium Ba	0.05	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	92.9	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	In Progress	mg/L	0.001	
	Magnesium Mg	32.2	mg/L	0.02	
	Manganese Mn	0.04	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.03	mg/L	0.02	
	Potassium K	19.7	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	32.9	mg/L	0.5	
	Strontium Sr	0.47	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London   Reported:30-Aug-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023232	Sample Description: MW00-3s		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.89	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.15	mg/L	0.05	
	Nitrate as N	5.17	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	5.17	mg/L	0.1	
	Carbon. Diss. Org. as C	0.8	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	601.	us/cm	1	
	Sulphate as SO4	24.	mg/L	2	
	Alkalinity CaCO3	315.	mg/L	1	
	Chloride as Cl	16.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	11.1	mg/L	0.02	
	Calculated Hardness CaCO3	367.	mg/L	In Progress	
	Turbidity	18.2	NTU	0.1	
	Bicarbonate as HCO3	313.	mg/L	In Progress	
	Carbonate CO3	2.	mg/L	In Progress	
	Total Cation	8.24	meq/L	In Progress	
	Total Anions	7.62	meq/L	In Progress	
	Ion Balance	3.93	% diff.	In Progress	
	Calculated T.D.S.	405.	mg/L	In Progress	
	Calculated Conductivity	714.	us/cm	In Progress	
	Saturation pH @4C	7.50	pH units	In Progress	
	Saturation pH @20C	7.10	pH units	In Progress	
	Langelier Index @4C	0.39		In Progress	
	Langelier Index @20C	0.79		In Progress	
00-A023232	Sample Description: MW00-3s		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client: (1093) Golder Associates Ltd. (London), London Reported: 30-Aug-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023232	Sample Description: MW00-3s				Date & Time Sampled: 26-Aug-2000
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.16	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	77.0	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	< 0.02	mg/L	0.02	
	Lead Pb	In Progress	mg/L	0.001	
	Magnesium Mg	42.5	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	3.14	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	18.9	mg/L	0.5	
	Strontium Sr	0.29	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.04	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client: (1093) Golder Associates Ltd. (London), London   Reported: 30-Aug-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023233	Sample Description: MW00-3d		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.72	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.07	mg/L	0.05	
	Nitrate as N	5.08	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	5.08	mg/L	0.1	
	Carbon, Diss. Org. as C	0.7	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	650.	us/cm	1	
	Sulphate as SO4	89.	mg/L	2	
	Alkalinity CaCO3	264.	mg/L	1	
	Chloride as Cl	8.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	8.16	mg/L	0.02	
	Calculated Hardness CaCO3	403.	mg/L	In Progress	
	Turbidity	2.20	NTU	0.1	
	Bicarbonate as HCO3	263.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	8.45	meq/L	In Progress	
	Total Anions	7.72	meq/L	In Progress	
	Ion Balance	4.50	% diff.	In Progress	
	Calculated T.D.S.	438.	mg/L	In Progress	
	Calculated Conductivity	772.	us/cm	In Progress	
	Saturation pH @4C	7.42	pH units	In Progress	
	Saturation pH @20C	7.02	pH units	In Progress	
	Langelier Index @4C	0.30		In Progress	
	Langelier Index @20C	0.70		In Progress	
00-A023233	Sample Description: MW00-3d		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:30-Aug-2000

Attention: MR. DAN BROWN

Purchase Order:

Client Reference: 001-3105

Date Received: 28-Aug-2000

Work Order: 71488

Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023233	Sample Description: MW00-3d				Date & Time Sampled: 26-Aug-2000
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	110.	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.04	mg/L	0.02	
	Lead Pb	In Progress	mg/L	0.001	
	Magnesium Mg	31.2	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	4.34	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	6.43	mg/L	0.5	
	Strontium Sr	1.04	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:30-Aug-2000   Page: 13

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023234	Sample Description: MW00-~~15~~ 5		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.60	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.20	mg/L	0.05	
	Nitrate as N	6.89	mg/L	0.1	
	Nitrite as N	0.03	mg/L	0.02	
	Nitrate + Nitrite as N	6.92	mg/L	0.1	
	Carbon. Diss. Org. as C	0.7	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	667.	us/cm	1	
	Sulphate as SO4	20.	mg/L	2	
	Alkalinity CaCO3	295.	mg/L	1	
	Chloride as Cl	37.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	8.99	mg/L	0.02	
	Calculated Hardness CaCO3	328.	mg/L	In Progress	
	Turbidity	21.6	NTU	0.1	
	Bicarbonate as HCO3	294.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	8.36	meq/L	In Progress	
	Total Anions	7.85	meq/L	In Progress	
	Ion Balance	3.11	% diff.	In Progress	
	Calculated T.D.S.	428.	mg/L	In Progress	
	Calculated Conductivity	786.	us/cm	In Progress	
	Saturation pH @4C	7.50	pH units	In Progress	
	Saturation pH @20C	7.10	pH units	In Progress	
	Langelier Index @4C	0.10		In Progress	
	Langelier Index @20C	0.50		In Progress	
00-A023234	Sample Description: MW00-15		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	2.69	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:30-Aug-2000 Page: 14

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023234	Sample Description: MW00-15				Date & Time Sampled: 26-Aug-2000
	Barium Ba	0.95	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.07	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	81.5	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	3.64	mg/L	0.02	
	Lead Pb	In Progress	mg/L	0.001	
	Magnesium Mg	30.3	mg/L	0.02	
	Manganese Mn	0.15	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.13	mg/L	0.02	
	Potassium K	2.06	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	40.1	mg/L	0.5	
	Strontium Sr	0.35	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.08	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.25	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:30-Aug-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023235	Sample Description: MW00-6s		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.51	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.07	mg/L	0.05	
	Nitrate as N	6.85	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	6.85	mg/L	0.1	
	Carbon. Diss. Org. as C	0.6	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	630.	us/cm	1	
	Sulphate as SO4	21.	mg/L	2	
	Alkalinity CaCO3	289.	mg/L	1	
	Chloride as Cl	27.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	7.66	mg/L	0.02	
	Calculated Hardness CaCO3	352.	mg/L	In Progress	
	Turbidity	6.44	NTU	0.1	
	Bicarbonate as HCO3	288.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	8.15	meq/L	In Progress	
	Total Anions	7.47	meq/L	In Progress	
	Ion Balance	4.39	% diff.	In Progress	
	Calculated T.D.S.	406.	mg/L	In Progress	
	Calculated Conductivity	724.	us/cm	In Progress	
	Saturation pH @4C	7.48	pH units	In Progress	
	Saturation pH @20C	7.08	pH units	In Progress	
	Langelier Index @4C	0.03		In Progress	
	Langelier Index @20C	0.43		In Progress	
00-A023235	Sample Description: MW00-6s		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	0.75	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London Reported:30-Aug-2000 Page: 16

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023235	Sample Description: MW00-6s				Date & Time Sampled: 26-Aug-2000
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	88.0	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.70	mg/L	0.02	
	Lead Pb	In Progress	mg/L	0.001	
	Magnesium Mg	32.2	mg/L	0.02	
	Manganese Mn	0.03	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	2.16	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	24.3	mg/L	0.5	
	Strontium Sr	0.22	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.04	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.04	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London). London   Reported:30-Aug-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488

Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023236	Sample Description: MW00-6d		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.66	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.10	mg/L	0.05	
	Nitrate as N	7.50	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	7.50	mg/L	0.1	
	Carbon. Diss. Org. as C	0.5	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	583.	us/cm	1	
	Sulphate as SO4	13.	mg/L	2	
	Alkalinity CaCO3	269.	mg/L	1	
	Chloride as Cl	22.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	6.89	mg/L	0.02	
	Calculated Hardness CaCO3	349.	mg/L	In Progress	
	Turbidity	1.16	NTU	0.1	
	Bicarbonate as HCO3	268.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	7.66	meq/L	In Progress	
	Total Anions	6.81	meq/L	In Progress	
	Ion Balance	5.88	% diff.	In Progress	
	Calculated T.D.S.	373.	mg/L	In Progress	
	Calculated Conductivity	656.	us/cm	In Progress	
	Saturation pH @4C	7.50	pH units	In Progress	
	Saturation pH @20C	7.10	pH units	In Progress	
	Langelier Index @4C	0.16		In Progress	
	Langelier Index @20C	0.56		In Progress	
00-A023236	Sample Description: MW00-6d		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

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CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London
Reported:30-Aug-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023236	Sample Description: MW00-6d				Date & Time Sampled: 26-Aug-2000
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	88.8	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.04	mg/L	0.02	
	Lead Pb	In Progress	mg/L	0.001	
	Magnesium Mg	31.0	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.85	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	14.4	mg/L	0.5	
	Strontium Sr	0.18	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	< 0.01	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:30-Aug-2000   Page: 19

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023237	Sample Description: MW00-7s		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.73	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.20	mg/L	0.05	
	Nitrate as N	6.85	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	6.85	mg/L	0.1	
	Carbon, Diss. Org. as C	0.8	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	596.	us/cm	1	
	Sulphate as SO4	22.	mg/L	2	
	Alkalinity CaCO3	298.	mg/L	1	
	Chloride as Cl	10.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	8.84	mg/L	0.02	
	Calculated Hardness CaCO3	354.	mg/L	In Progress	
	Turbidity	13.5	NTU	0.1	
	Bicarbonate as HCO3	296.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	7.77	meq/L	In Progress	
	Total Anions	7.19	meq/L	In Progress	
	Ion Balance	3.88	% diff.	In Progress	
	Calculated T.D.S.	386.	mg/L	In Progress	
	Calculated Conductivity	680.	us/cm	In Progress	
	Saturation pH @4C	7.48	pH units	In Progress	
	Saturation pH @20C	7.08	pH units	In Progress	
	Langelier Index @4C	0.25		In Progress	
	Langelier Index @20C	0.65		In Progress	
00-A023237	Sample Description: MW00-7s		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	1.41	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:30-Aug-2000   Page: 20

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023237	Sample Description: MW00-7s		Date & Time Sampled: 26-Aug-2000		
	Barium Ba	0.44	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	0.08	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	84.4	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	1.53	mg/L	0.02	
	Lead Pb	In Progress	mg/L	0.001	
	Magnesium Mg	34.7	mg/L	0.02	
	Manganese Mn	0.07	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	0.04	mg/L	0.02	
	Potassium K	2.43	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	14.7	mg/L	0.5	
	Strontium Sr	0.29	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.03	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.15	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:30-Aug-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023238	Sample Description: MW00-7d		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.69	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.29	mg/L	0.05	
	Nitrate as N	6.00	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	6.00	mg/L	0.1	
	Carbon. Diss. Org. as C	0.6	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	543.	us/cm	1	
	Sulphate as SO4	18.	mg/L	2	
	Alkalinity CaCO3	268.	mg/L	1	
	Chloride as Cl	10.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	7.63	mg/L	0.02	
	Calculated Hardness CaCO3	347.	mg/L	In Progress	
	Turbidity	1.26	NTU	0.1	
	Bicarbonate as HCO3	267.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	7.20	meq/L	In Progress	
	Total Anions	6.44	meq/L	In Progress	
	Ion Balance	5.51	% diff.	In Progress	
	Calculated T.D.S.	348.	mg/L	In Progress	
	Calculated Conductivity	611.	us/cm	In Progress	
	Saturation pH @4C	7.50	pH units	In Progress	
	Saturation pH @20C	7.10	pH units	In Progress	
	Langelier Index @4C	0.19		In Progress	
	Langelier Index @20C	0.59		In Progress	
00-A023238	Sample Description: MW00-7d		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:30-Aug-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023238	Sample Description: MW00-7d		Date & Time Sampled: 26-Aug-2000		
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	88.0	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.02	mg/L	0.02	
	Lead Pb	In Progress	mg/L	0.001	
	Magnesium Mg	30.8	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.01	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	5.62	mg/L	0.5	
	Strontium Sr	0.17	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.03	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:30-Aug-2000

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023239	Sample Description: MW00-8s		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.65	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen,T. Kjeldahl as N	0.24	mg/L	0.05	
	Nitrate as N	19.6	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	19.6	mg/L	0.1	
	Carbon, Diss. Org. as C	2.3	mg/L	0.5	
	Phosphorus,Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	640.	us/cm	1	
	Sulphate as SO4	14.	mg/L	2	
	Alkalinity CaCO3	263.	mg/L	1	
	Chloride as Cl	18.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica, Reactive as SiO2	5.76	mg/L	0.02	
	Calculated Hardness CaCO3	391.	mg/L	In Progress	
	Turbidity	10.0	NTU	0.1	
	Bicarbonate as HCO3	262.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	8.11	meq/L	In Progress	
	Total Anions	7.46	meq/L	In Progress	
	Ion Balance	4.21	% diff.	In Progress	
	Calculated T.D.S.	419.	mg/L	In Progress	
	Calculated Conductivity	682.	us/cm	In Progress	
	Saturation pH @4C	7.53	pH units	In Progress	
	Saturation pH @20C	7.13	pH units	In Progress	
	Langelier Index @4C	0.12		In Progress	
	Langelier Index @20C	0.52		In Progress	
00-A023239	Sample Description: MW00-8s		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	0.50	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client: (1093) Golder Associates Ltd. (London), London Reported: 30-Aug-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023239	Sample Description: MW00-8s		Date & Time Sampled: 26-Aug-2000		
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	86.8	mg/L	0.05	
	Chromium Cr	0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	0.01	mg/L	0.01	
	Iron Fe	0.34	mg/L	0.02	
	Lead Pb	In Progress	mg/L	0.001	
	Magnesium Mg	42.4	mg/L	0.02	
	Manganese Mn	0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.76	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	5.69	mg/L	0.5	
	Strontium Sr	0.23	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	0.02	mg/L	0.02	
	Vanadium V	0.01	mg/L	0.01	
	Zinc Zn	0.05	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:30-Aug-2000   Page: 25

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	28-Aug-2000
Work Order:	71488	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023240	Sample Description: MW00-8d		Date & Time Sampled: 26-Aug-2000		
	pH Value	7.46	pH units	0.1	
	Ammonia as N	< 0.05	mg/L	0.05	
	Nitrogen.T. Kjeldahl as N	0.08	mg/L	0.05	
	Nitrate as N	5.67	mg/L	0.1	
	Nitrite as N	< 0.02	mg/L	0.02	
	Nitrate + Nitrite as N	5.67	mg/L	0.1	
	Carbon. Diss. Org. as C	0.7	mg/L	0.5	
	Phosphorus.Diss.Orth as P	< 0.01	mg/L	0.01	
	Conductivity	550	us/cm	1	
	Sulphate as SO4	18.	mg/L	2	
	Alkalinity CaCO3	276.	mg/L	1	
	Chloride as Cl	9.	mg/L	1	
	Colour	< 5	TCU	5	
	Silica. Reactive as SiO2	7.75	mg/L	0.02	
	Calculated Hardness CaCO3	352.	mg/L	In Progress	
	Turbidity	0.94	NTU	0.1	
	Bicarbonate as HCO3	275.	mg/L	In Progress	
	Carbonate CO3	1.	mg/L	In Progress	
	Total Cation	7.28	meq/L	In Progress	
	Total Anions	6.55	meq/L	In Progress	
	Ion Balance	5.27	% diff.	In Progress	
	Calculated T.D.S.	353.	mg/L	In Progress	
	Calculated Conductivity	617.	us/cm	In Progress	
	Saturation pH @4C	7.48	pH units	In Progress	
	Saturation pH @20C	7.08	pH units	In Progress	
	Langelier Index @4C	-0.02		In Progress	
	Langelier Index @20C	0.38		In Progress	
00-A023240	Sample Description: MW00-8d		Date & Time Sampled: 26-Aug-2000		
	Aluminum Al	< 0.03	mg/L	0.03	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

PRELIMINARY REPORT (Final Data may be subject to change.)

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London Reported:30-Aug-2000

Attention: MR. DAN BROWN
Client Reference: 001-3105
Work Order: 71488
Purchase Order:
Date Received: 28-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A023240	Sample Description: MW00-8d		Date & Time Sampled: 26-Aug-2000		
	Barium Ba	< 0.04	mg/L	0.04	
	Beryllium Be	< 0.01	mg/L	0.01	
	Bismuth Bi	< 0.1	mg/L	0.1	
	Boron B	< 0.02	mg/L	0.02	
	Cadmium Cd	< 0.002	mg/L	0.002	
	Calcium Ca	89.7	mg/L	0.05	
	Chromium Cr	< 0.01	mg/L	0.01	
	Cobalt Co	< 0.02	mg/L	0.02	
	Copper Cu	< 0.01	mg/L	0.01	
	Iron Fe	0.02	mg/L	0.02	
	Lead Pb	In Progress	mg/L	0.001	
	Magnesium Mg	31.0	mg/L	0.02	
	Manganese Mn	< 0.02	mg/L	0.02	
	Molybdenum Mo	< 0.02	mg/L	0.02	
	Nickel Ni	< 0.05	mg/L	0.05	
	Phosphorus as P	< 0.02	mg/L	0.02	
	Potassium K	1.21	mg/L	0.2	
	Silver Ag	< 0.01	mg/L	0.01	
	Sodium Na	5.14	mg/L	0.5	
	Strontium Sr	0.20	mg/L	0.02	
	Tin Sn	< 0.07	mg/L	0.07	
	Titanium Ti	< 0.02	mg/L	0.02	
	Vanadium V	< 0.01	mg/L	0.01	
	Zinc Zn	0.02	mg/L	0.01	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Attention: MR. DAN BROWN
Client Name: Golder Associates Ltd. (London)
Address: 500 Nottinghill Road
London, ON
N6K 3P1
Telephone: 519-471-9600
FAX: 519-471-4707

Laboratory Work Order: 71246

This Certificate of Analysis is for the following:

Sample(s) Received on: 18-Aug-2000 Reported on: 21-Aug-2000
Client Reference: 0001-3105
Purchase Order:
Quotation No.:

Results for solid samples are corrected for moisture and reported as dry weight.

Test procedures used are performance based methods referenced from "Standard Methods for the Examination of Water and Wastewater", MOEE, EPA, NIOSH or other published references.

Water samples are discarded 4 weeks after the results have been reported. Solid samples are retained for 3 months. Storage for longer periods requires prior arrangement with the laboratory.

ELECTRONICALLY AUTHORIZED
Signatures to follow on original report.

Reviewed by	Authorized by
Darlene Hoogenes or Kathie Hughes Service Representative	Roger Rioux or Lorraine DaSilva Lab Manager QA Officer

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:21-Aug-2000   Page: 1

Attention: MR. DAN BROWN
Client Reference: 0001-3105
Work Order: 71246
Purchase Order:
Date Received: 18-Aug-2000
Sample Type: Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A022378	Sample Description: BH00-4D			Date & Time Sampled: 17-Aug-2000	
	TPH - Hot Extr. (>C25)	2.	mg/L	1	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

CERTIFICATE OF ANALYSIS

GOLDER ASSOCIATES
AUG 24 20
RECEIVED — LONDON

Attention: MR. DAN BROWN
Client Name: Golder Associates Ltd. (London)
Address: 500 Nottinghill Road
London. ON
N6K 3P1
Telephone: 519-471-9600
FAX: 519-471-4707

Laboratory Work Order: 71417

This Certificate of Analysis is for the following:

Sample(s) Received on: 23-Aug-2000
Reported on: 24-Aug-2000
Client Reference: 001-3105
Purchase Order:
Quotation No.:

Results for solid samples are corrected for moisture and reported as dry weight.

Test procedures used are performance based methods referenced from "Standard Methods for the Examination of Water and Wastewater". MOEE. EPA. NIOSH or other published references.

Water samples are discarded 4 weeks after the results have been reported. Solid samples are retained for 3 months. Storage for longer periods requires prior arrangement with the laboratory.

ELECTRONICALLY AUTHORIZED
Signatures to follow on original report.

Reviewed by	Authorized by
Darlene Hoogenes or Kathie Hughes Service Representative	Roger Rioux or Lorraine DaSilva Lab Manager QA Officer

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:24-Aug-2000   Page: 1

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	23-Aug-2000
Work Order:	71417	Sample Type:	Liquid

Sample #	Test	Result	Units	EQL	Comment
00-A022948	Sample Description: BH00-4D		Date & Time Sampled: 23-Aug-2000		
	TPH - Hot Extr. (>C25)	< 1	mg/L	1	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

Philip Services Corporation

GOLDER ASSOCIATES
AUG 2 [illegible]
RECEIVED — LONDON

CERTIFICATE OF ANALYSIS

Attention: MR. DAN BROWN
Client Name: Golder Associates Ltd. (London)
Address: 500 Nottinghill Road
London, ON
N6K 3P1
Telephone: 519-471-9600
FAX: 519-471-4707

Laboratory Work Order: 71381

This Certificate of Analysis is for the following:

Sample(s) Received on: 23-Aug-2000   Reported on: 25-Aug-2000
Client Reference: 001-3105
Purchase Order:
Quotation No.:

Results for solid samples are corrected for moisture and reported as dry weight.

Test procedures used are performance based methods referenced from "Standard Methods for the Examination of Water and Wastewater", MOEE, EPA, NIOSH or other published references.

Water samples are discarded 4 weeks after the results have been reported. Solid samples are retained for 3 months. Storage for longer periods requires prior arrangement with the laboratory.

ELECTRONICALLY AUTHORIZED
Signatures to follow on original report.

Reviewed by	Authorized by		
Darlene Hoogenes or Kathie Hughes	Roger Rioux	or	Lorraine DaSilva
Service Representative	Lab Manager		QA Officer

Philip Services Corporation

CERTIFICATE OF ANALYSIS

Client:(1093) Golder Associates Ltd. (London), London   Reported:25-Aug-2000   Page: 1

Attention:	MR. DAN BROWN	Purchase Order:	
Client Reference:	001-3105	Date Received:	23-Aug-2000
Work Order:	71381	Sample Type:	Liquid

Sample #	**Test**	**Result**	**Units**	**EQL**	**Comment**
00-A022802	Sample Description: S. Spring		Date & Time Sampled: 22-Aug-2000		
	TPH - Hot Extr. (>C25)	< 1	mg/L	1	

EXPLANATION OF CODES
EQL Estimated Quantitation Limit

APPENDIX F

BACTERIOLOGICAL ANALYTICAL REPORTS

A 1U 1

CHAIN OF CUSTODY

Client: Golder Assoc. Ltd.
Contact: Dan Brown
Address: 500 Nottinghill Rd.
London, ON.
Phone: 471-9600 Fax: 471-4707
Project: 001-3105.
PO #: Quote #:

Page 1 of 1

GAP EnviroMicrobial Services
1020 Hargrieve Road, Unit M
London, Ontario Canada N6E 1P5

Tel.: (519) 681-0571
Fax: (519) 681-7150
Toll Free: 1-800-680-9771

ANALYSES REQUESTED

Please Check Analysis Requested

SAMPLE IDENTIFICATION (Collection Site or ID Number)	Matrix (Water, Soil, Food, etc.)	Heterotrophic Plate Count	Total Coliforms	Escherichia coli	Pseudomonas aeruginosa	Clostridium perfringens	Fecal Streptococci	Cryptosporidium/Giardia	Yeasts/Moulds	Aerobic Spore				Date/Time Collected	Raw Finished	Chlorine Residual	Laboratory Sample Number
~~Well 6 Sept 4 1 [illegible]~~	Water																~~[illegible]~~
~~Well 6 Sept 4 4 [illegible]~~	↓																~~[illegible]~~
Well 6 Sept 4 20:20	↓									X				Sept 4 20:20			22981
Well 6 Sept 4 23:35	↓									X				Sept 4 23:35			22982
Well 6 Sept 5 02:30	↓									X				Sep 5 02:30			22983
Well 6 Sept 5 05:35	↓									X				Sep 5 05:35			22984
Well 6 Sept 5 08:27	↓									X				Sp 5 08:27			22985
~~Well 7 Sept 5 08:20~~										~~X~~				~~Sep 5 08:20~~			

PLEASE FILL IN AREAS BELOW

Turnaround Required
☐ Normal (5-10 Working Days)
☒ Rush (Specify below)
Date:
Time:

Report Options
☒ Fax Results
☐ Mail Results
☐ Call Results
☐ Fax and mail

Special Instructions: ASAP
RUSH

Collected by: Golder Staff.
Name (print): S. MILLWARD
Relinquished: [illegible]
Received by: J. Dodge.
Date: Sep 5/00 Time: 12.00p.
Relinquished to Laboratory
Name (print):

LABORATORY USE ONLY

Received by:
Date: Time:
Condition & Comments:
Signature:

SAMPLE SUBMISSION FORM AND FINAL RESULTS

GAP EnviroMicrobial Services Inc.

Phone: (519) 681-0571

Fax: (519) 681-7150

MUNICIPALITY: Golder & Assoc Project 001-3105	DATE RECEIVED: Sep 5/00	REPORT TO: Dan Brown	INVOICE TO:
	RECEIVED BY: T. Dodge	ADDRESS:	ADDRESS:
SOURCE:	COMMENTS:		
		PHONE: 519-471-7600	PHONE:
DATE SAMPLED:	DATE ANALYZED: Sep 5.00	FAX: 519-471-4707	FAX:

Check Required Tests

PA = Presence Absence, Others Membrane Filtration

LAB #	SENDERS #	SITE DESCRIPTION (sampling location, time, etc.)	Chlorine Residual (mg/L)	PA	TC	EC	FC	FS	PSA	CP	HPC	TAS
22981		Well 6 Sep 4 20:20										x
22982		Well 6 23:35										x
22983		Well 6 5 2:30										x
22984		Well 6 5 5:35										x
22985		Well 6 5 8:27										x

LAB #	SENDERS #	RESULTS - BACTERIA PER 100 MILILITRES (mL)							PER mL	COMMENTS:
		Total Coliforms	Background	*Escherichia coli*	Faecal Coliforms	Faecal Streptococci	*Pseudomonas aeruginosa*	*Clostridium perfringens*	Heterotrophic Plate Count	TAS/500 mL
22981										2
22982										2
22983										1
22984										0
22985										2

RESULTS CALCULATED BY: T. Dodge

Signature:

APPROVED BY: A Scott

Signature:

Date Issued: 6-9-00

PA = Presence-Absence, TC = Total Coliforms, EC = E. coli; FC = Faecal Coliforms; FS = Faecal Streptococci, PSA = Pseudomonas aeruginosa, CP = Clostridium perfringens, HPC = Heterotrophic Plate Count

L=Less Than; G=Greater Than; A=Approximate Value; C=Crowded Filter; LA=Laboratory Accident; NR=No Result

GAP EnviroMicrobial Services Inc., 1020 Hargrieve Rd., #14, London, Ontario, N6E 1P5 TOLL FREE: 1-800-680-9771

EXCEL P/FORMS/QM,SUBREPREV7, Revision 7, August 1, 2000

CHAIN OF CUSTODY

Client: Golden Assoc. Ltd.
Contact: Dan Brown.
Address: 500 Nottinghill Rd.
London ON N6K 3P1
Phone: 471-9600 Fax: 471-4707
Project: 001-3105
PO #: Quote #:

Page 1 of 2

GAP EnviroMicrobial Services
1020 Hargrieve Road, Unit M
London, Ontario Canada N6E 1P5

Tel.: (519) 681-0571
Fax: (519) 681-7150
Toll Free: 1-800-680-9771

	SAMPLE IDENTIFICATION (Collection Site or ID Number)	Matrix (Water, Soil, Food, etc.)	Heterotrophic Plate Count	Total Coliforms	Escherichia coli	Pseudomonas aeruginosa	Clostridium perfringens	Fecal Streptococci	Cryptosporidium/Giardia	Yeasts/Moulds	Aerobic Spores				Date/Time Collected	Raw Finished	Chlorine Residual	Laboratory Sample Number
1	Well 6 Sept 5 1:00 pm	Water									X				Sept 5/00			23062
2	Well 6 Sept 5 15:40										X							23063
3	Well 6 Sept 5 6:10 pm										X							23064
4	Well 6 Sept 5 8:15 pm										X							23065
5	Well 6 Sept 5 11:00 pm										X							23066
6	Well 6 Sept 6 01:54										X				Sept 6			23067
7	Well 6 Sept 6. 04:55										X				Sept 6			23068
8	Well 7 Sept 5 13:20										X				Sept 5			23069
9	Well 7 Sept 5 15:50										X							23070
10	Well 7 Sept 5 6:15 pm										X							23071
11	Well 7 Sept 5 8:20 pm										X							23072
12	Well 7 Sept 5 11:00 pm										X							23073
13	Well 7 Sept 6 01:58 am										X				Sept 6/00			23074

PLEASE FILL IN AREAS BELOW

Turnaround Required
☐ Normal (5-10 Working Days)
☒ Rush (Specify below)
Date:
Time: A.S.A.P

Report Options
☒ Fax Results
☒ Mail Results
☐ Call Results
☐ Fax and mail

Special Instructions:

Collected by: Golden Assoc.
Name (print):

Relinquished:
Received by:
Date: Time:

Relinquished to Laboratory
Name (print):

LABORATORY USE ONLY

Received by: M.V.
Date: Sept/06 Time: 8:00 pm
Condition & Comments:

Signature:

CC-001 7-99

A401

CHAIN OF CUSTODY

Page 2 of 2

GAP EnviroMicrobial Services
1020 Hargrieve Road, Unit M
London, Ontario Canada N6E 1P5

Tel.: (519) 681-0571
Fax: (519) 681-7150
Toll Free: 1-800-680-9771

Client: Golder Assoc. Ltd.
Contact: Dan Brown
Address: 500 Nottinghill Rd, London ON N6K 3P1
Phone: 471-9600 Fax: 471-1707
Project: 001-3105
PO #: ______ Quote #: ______

	SAMPLE IDENTIFICATION (Collection Site or ID Number)	Matrix (Water, Soil, Food, etc.)	Heterotrophic Plate Count	Total Coliforms	Escherichia coli	Pseudomonas aeruginosa	Clostridium perfringens	Fecal Streptococci	Cryptosporidium/Giardia	Yeasts/Moulds	Aerobic Spores.				Date/Time Collected	Raw Finished	Chlorine Residual	Laboratory Sample Number
	~~Well 7 Sept 6 4:55 am~~	Water									X				Sept 6/00			
	~~Well 6 Sept 6 8:00 am~~										X							
14	Well 7 Sept 6 8:00 am										X							23075
15	Well 6 Sept 6 11:00 am										X							23076
16	Well 7 Sept 6 11:00 am										X							23077
17	Well 6 Sept 6 13:45										X							23078
18	Well 7 Sept 6 13:40										X							23079
19	Well 6 Sept 6 16:45.										X							23080
	~~Well 7 Sept 6 16:15 pm~~										X							
20	Well 6 Sept 5 08:15 pm										~~X~~							23081
21	Well 6 Sept 6 04:55										~~X~~							23082
22	Well 7 Sept 6 4:35 pm										~~X~~							23083

PLEASE FILL IN AREAS BELOW

Turnaround Required
☐ Normal (5-10 Working Days)
☒ Rush (Specify below)
Date: A.S.A.P.
Time: ______

Report Options
☒ Fax Results
☒ Mail Results
☐ Call Results
☐ Fax and mail

Special Instructions: ______

Collected by: Golder Staff.
Name (print): ______

Relinquished: ______
Received by: ______
Date: ______ Time: ______

Relinquished: to Laboratory ______
Name (print): ______

LABORATORY USE ONLY

Received by: M. VanDyke
Date: Sept 06 Time: 8:00 pm
Condition & Comments: ______
Signature: Michel Va

CC-001 7-99

SAMPLE SUBMISSION FORM AND FINAL RESULTS

GAP EnviroMicrobial Services Inc.

Phone: (519) 681-0571 RUSH

Fax: (519) 681-7150

MUNICIPALITY: Golder Assoc. Ltd
SOURCE:
DATE SAMPLED:
DATE RECEIVED: SEP 6 2000
RECEIVED BY: J. Dodge
COMMENTS:
DATE ANALYZED: SEP 7 2000
REPORT TO:
ADDRESS:
PHONE:
FAX:
INVOICE TO:
ADDRESS:
PHONE:
FAX:

LAB #	SENDERS #	SITE DESCRIPTION (sampling location, time, etc.)	Chlorine Residual (mg/L)	Check Required Tests PA = Presence Absence, Others Membrane Filtration PA	TC	EC	FC	FS	PSA	CP	HPC	TAS
023062	1	Well 6 Sep 5 1:00 pm										x
023063	2	Well 6 Sep 5 15:40										x
023064	3	Well 6 Sep 5 6:10 pm										x
023065	4	Well 6 Sep 5 8:15 pm										x
023066	5	Well 6 Sep 5 11:00 pm										x

LAB #	SENDERS #	RESULTS - BACTERIA PER 100 MILILITRES (mL) Total Coliforms	Background	Escherichia coli	Faecal Coliforms	Faecal Streptococci	Pseudomonas aeruginosa	Clostridium perfringens	PER mL Heterotrophic Plate Count	COMMENTS: TAS/500ml
023062										1
023063										0
023064										1
023065										0
023066										3

RESULTS CALCULATED BY:
Signature: Dodge

APPROVED BY: M. Van Dyke.
Signature:
Date Issued: Sept 08/00

PA = Presence-Absence; TC = Total Coliforms; EC = E. coli; FC = Faecal Coliforms; FS = Faecal Streptococci; PSA = Pseudomonas aeruginosa; CP = Clostridium perfringens; HPC = Heterotrophic Plate Count

L=Less Than; G=Greater Than; A=Approximate Value; C=Crowded Filter; LA=Laboratory Accident; NR=No Result

GAP EnviroMicrobial Services Inc., 1020 Hargrieve Rd. #14, London, Ontario, N6E 1P5 TOLL FREE: 1-800-680-9771

EXCEL,P:/FORMS/QM,SUBREPREV7, Revision 7, August 1, 2000

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SAMPLE SUBMISSION FORM AND FINAL RESULTS

GAP EnviroMicrobial Services Inc.

Phone: (519) 681-0571 RUSH Fax: (519) 681-7150

MUNICIPALITY:	DATE RECEIVED: SEP 6 2000	REPORT TO:	INVOICE TO:
	RECEIVED BY: D. Dodge	ADDRESS:	ADDRESS:
SOURCE:	COMMENTS:		
		PHONE:	PHONE:
DATE SAMPLED:	DATE ANALYZED: SEP 7 2000	FAX:	FAX:

LAB #	SENDERS #	SITE DESCRIPTION (sampling location, time, etc.)	Chlorine Residual (mg/L)	PA	TC	EC	FC	FS	PSA	CP	HPC	TAS
				Check Required Tests PA = Presence Absence, Others Membrane Filtration								
023067	6	Well 6 Sep6 01:54										x
023068	7	Well 6 Sep6 04:55										x
023069	8	Well 7 Sep5 13:20										x
023070	9	Well 7 Sep5 15:50										x
023071	10	Well 7 Sep5 6:15pm										x

RESULTS - BACTERIA PER 100 MILILITRES (mL) / PER mL

LAB #	SENDERS #	Total Coliforms	Background	*Escherichia coli*	Faecal Coliforms	Faecal Streptococci	*Pseudomonas aeruginosa*	*Clostridium perfringens*	Heterotrophic Plate Count (PER mL)	COMMENTS: TAS/500 ml
023067										2
023068										0
023069										0
023070										1
023071										0

RESULTS CALCULATED BY:

Signature: Dodge

APPROVED BY: M. Van Dyke.

Signature: Michele

Date Issued: Sep 08/00

PA = Presence-Absence; TC = Total Coliforms; EC = E coli; FC = Faecal Coliforms; FS = Faecal Streptococci; PSA = Pseudomonas aeruginosa; CP = Clostridium perfringens; HPC = Heterotrophic Plate Count

L=Less Than; G=Greater Than; A=Approximate Value; C=Crowded Filter; LA=Laboratory Accident; NR=No Result

GAP EnviroMicrobial Services Inc.,1020 Hargrieve Rd.,#14, London, Ontario, N6E 1P5 TOLL FREE: 1-800-680-9771

EXCEL,P:/FORMSQM,SUBREPREV7, Revision 7, August 1, 2000

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Page 3 of 5

SAMPLE SUBMISSION FORM AND FINAL RESULTS

GAP EnviroMicrobial Services Inc.

Phone: (519) 681-0571

Fax: (519) 681-7150

RUSH

MUNICIPALITY:	DATE RECEIVED: [illegible] 6 2000	REPORT TO:	INVOICE TO:
	RECEIVED BY: J. Dodge	ADDRESS:	ADDRESS:
SOURCE:	COMMENTS:		
		PHONE:	PHONE:
DATE SAMPLED:	DATE ANALYZED: SEP 7 2000	FAX:	FAX:

LAB #	SENDERS #	SITE DESCRIPTION (sampling location, time, etc.)	Chlorine Residual (mg/L)	PA	TC	EC	FC	FS	PSA	CP	HPC	TAS
023072	11	Well 7 Sep 5 8:20pm										x
023073	12	Well 7 Sep 5 11:00pm										x
023074	13	Well 7 Sep 6 01:58										x
023075	14	Well 7 Sep 6 8:00am										x
023076	15	Well 6 Sep 6 11:00am										x

Check Required Tests: PA = Presence Absence, Others Membrane Filtration

LAB #	SENDERS #	RESULTS - BACTERIA PER 100 MILILITRES (mL)							PER mL	COMMENTS:
		Total Coliforms	Background	*Escherichia coli*	Faecal Coliforms	Faecal Streptococci	*Pseudomonas aeruginosa*	*Clostridium perfringens*	Heterotrophic Plate Count	TAS/500mL
023072										0
023073										0
023074										0
023075										0
023076										0

RESULTS CALCULATED BY:

Signature: [illegible] Dodge

APPROVED BY: M. Van Dyke.

Signature: Michele [illegible]

Date Issued: Sept 08/00

PA = Presence-Absence; TC = Total Coliforms, EC = E. coli, FC = Faecal Coliforms, FS = Faecal Streptococci; PSA = Pseudomonas aeruginosa, CP = Clostridium perfringens; HPC = Heterotrophic Plate Count

L=Less Than; G=Greater Than, A=Approximate Value; C=Crowded Filter; LA=Laboratory Accident; NR=No Result

GAP EnviroMicrobial Services Inc., 1020 Hargrieve Rd., #14, London, Ontario, N6E 1P5 TOLL FREE: 1-800-680-9771

EXCEL,P:FORMSQM,SUBREPREV7, Revision 7, August 1, 2000

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SAMPLE SUBMISSION FORM AND FINAL RESULTS

GAP EnviroMicrobial Services Inc.

Phone: (519) 681-0571

Fax: (519) 681-7150

RUSH

MUNICIPALITY:	DATE RECEIVED: SEP 6 2000	REPORT TO:	INVOICE TO:
	RECEIVED BY: J. Dodge	ADDRESS:	ADDRESS:
SOURCE:	COMMENTS:		
		PHONE:	PHONE:
DATE SAMPLED:	DATE ANALYZED: SEP 7 2000	FAX:	FAX:

LAB #	SENDERS #	SITE DESCRIPTION (sampling location, time, etc.)	Chlorine Residual (mg/L)	PA	TC	EC	FC	FS	PSA	CP	HPC	TAS
				Check Required Tests PA = Presence Absence, Others Membrane Filtration								
023077	16	Well 7 Sep6 11:00am										x
023078	17	Well 6 Sep6 13:45										x
023079	18	Well 7 Sep6 13:40										x
023080	19	Well 6 Sep6 16:45										x
023081	20	Well 6 Sep5 08:15 pm										x

LAB #	SENDERS #	Total Coliforms	Background	Escherichia coli	Faecal Coliforms	Faecal Streptococci	Pseudomonas aeruginosa	Clostridium perfringens	Heterotrophic Plate Count	COMMENTS:
		RESULTS - BACTERIA PER 100 MILILITRES (mL)							PER mL	TAS/500 ml
023077										0
023078 023079										2 0
023080										0
023081										1

RESULTS CALCULATED BY:

Signature: Donna Dodge

APPROVED BY: M. Van Dyke

Signature:

Date Issued: Sept 08/00

PA = Presence-Absence; TC = Total Coliforms; EC = E. coli; FC = Faecal Coliforms; FS = Faecal Streptococci; PSA = Pseudomonas aeruginosa; CP = Clostridium perfringens; HPC = Heterotrophic Plate Count

L=Less Than; G=Greater Than, A=Approximate Value; C=Crowded Filter, LA=Laboratory Accident; NR=No Result

GAP EnviroMicrobial Services Inc., 1020 Hargrieve Rd., #14, London, Ontario, N6E 1P5 TOLL FREE: 1-800-680-9771

EXCEL,P:/FORMSQM,SUBREPREV7, Revision 7, August 1, 2000

SAMPLE SUBMISSION FORM AND FINAL RESULTS

GAP EnviroMicrobial Services Inc.

H4D1

Page 5 of 5

Phone: (519) 681-0571

Fax: (519) 681-7150

RUSH

MUNICIPALITY:	DATE RECEIVED: SEP 6 2000	REPORT TO:	INVOICE TO:
	RECEIVED BY: J. Dodge	ADDRESS:	ADDRESS:
SOURCE:	COMMENTS:		
		PHONE:	PHONE:
DATE SAMPLED:	DATE ANALYZED: SEP 7 2000	FAX:	FAX:

LAB #	SENDERS #	SITE DESCRIPTION (sampling location, time, etc.)	Chlorine Residual (mg/L)	Check Required Tests PA = Presence Absence, Others Membrane Filtration								
				PA	TC	EC	FC	FS	PSA	CP	HPC	TAS
[illegible]	21	Well 6 Sep 6 04:55										x
[illegible]	22	Well 7 Sep 6 4:35 pm										x

LAB #	SENDERS #	RESULTS - BACTERIA PER 100 MILILITRES (mL)							PER mL	COMMENTS:
		Total Coliforms	Background	*Escherichia coli*	Faecal Coliforms	Faecal Streptococci	*Pseudomonas aeruginosa*	*Clostridium perfringens*	Heterotrophic Plate Count	TAS/500 ml
[illegible]										0
[illegible]										1

RESULTS CALCULATED BY:

Signature: Dodge

APPROVED BY: M. Van Dyke.

Signature:

Date Issued: Sept 08/00

PA = Presence-Absence; TC = Total Coliforms; EC = E. coli; FC = Faecal Coliforms; FS = Faecal Streptococci; PSA = Pseudomonas aeruginosa; CP = Clostridium perfringens; HPC = Heterotrophic Plate Count

L=Less Than; G=Greater Than; A=Approximate Value; C=Crowded Filter; LA=Laboratory Accident; NR=No Result

GAP EnviroMicrobial Services Inc., 1020 Hargrieve Rd., #14, London, Ontario, N6E 1P5

TOLL FREE: 1-800-680-9771

EXCEL,P/FORMSQM,SUBREPREV7, Revision 7, August 1, 2000

A 401

Phone: (519) 681-

SAMPLE SUBMISSION FORM AND FINAL RESULTS

GAP EnviroMicrobial Services Inc.

GOLDER ASSOCIATES
Fax: (519) 681-71
SEP 11 2000
RECEIVED — LONDON

MUNICIPALITY: Golders	DATE RECEIVED: Aug 30/00	REPORT TO: Rick Vanthoort	INVOICE TO:
	RECEIVED BY:	ADDRESS:	ADDRESS:
SOURCE: project 001-3105	COMMENTS:		
		PHONE: 471-9600	PHONE:
DATE SAMPLED: Aug 29/00	DATE ANALYZED: Aug 30/00	FAX: 471-4707	FAX:

LAB #	SENDERS #	SITE DESCRIPTION (sampling location, time, etc.)	Chlorine Residual (mg/L)	PA	TC	EC	FC	FS	PSA	CP	HPC
22647		MW00-17S aerobic spore formers									
22648		MW 00-17D									
22649		MW 00-18S									
22650		MW00-18D									
22651		MW00-19S.									

Check Required Tests: PA = Presence Absence, Others Membrane Filtration

RESULTS - BACTERIA PER 100 MILILITRES (mL)

LAB #	SENDERS #	Total Coliforms	Background	Escherichia coli	Faecal Coliforms	Faecal Streptococci	Pseudomonas aeruginosa	Clostridium perfringens	per 500mL Aerobic Spore-formers	COMMENTS:
22647	17S								250	
22648	17D								1150	
22649	18S								1650	
22650	18D								100	
22651.	19S								450	

RESULTS CALLED/FAXED BY: A. Scott

Signature:

APPROVED BY: M. Van Dyke.

Signature:

Date Issued: Sept 07/00

PA = Presence-Absence; TC = Total Coliforms; EC = E. coli; FC = Faecal Coliforms; FS = Faecal Streptococci; PSA = Pseudomonas aeruginosa; CP = Clostridium perfringens; HPC = Heterotrophic Plate Count

L=Less Than; G=Greater Than; A=Approximate Value; C=Crowded Filter; LA=Laboratory Accident; NR=No Result

GAP EnviroMicrobial Services Inc., 1020 Hargrieve Rd., #14, London, Ontario, N6E 1P5 TOLL FREE: 1-800-680-9771

EXCEL P:/FORMSQM,SUBREPREV7, Revision 7, August 1, 2000

SAMPLE SUBMISSION FORM AND FINAL RESULTS

GAP EnviroMicrobial Services Inc.

Phone: (519) 681-0571

Fax: (519) 681-7150

MUNICIPALITY: Golders	DATE RECEIVED: Aug30/00	REPORT TO: Rick Vandt Voort	INVOICE TO:
	RECEIVED BY:	ADDRESS:	ADDRESS:
SOURCE: project-001-3105	COMMENTS: A401	PHONE: 471-9600	PHONE:
DATE SAMPLED: Aug29/00.	DATE ANALYZED: Aug 30/00	FAX: 471-4707.	FAX:

LAB #	SENDERS #	SITE DESCRIPTION (sampling location, time, etc.)	Chlorine Residual (mg/L)	PA	TC	EC	FC	FS	PSA	CP	HPC
22652		MW00-19D aerobic spore formers									
22653		MW00-20S									
22654		MW00-20D									
22655		MW00 22									

Check Required Tests: PA = Presence Absence, Others Membrane Filtration

RESULTS - BACTERIA PER 100 MILILITRES (mL)

LAB #	SENDERS #	Total Coliforms	Background	Escherichia coli	Faecal Coliforms	Faecal Streptococci	Pseudomonas aeruginosa	Clostridium perfringens	per 500mL Aerobic spore-formers	COMMENTS:
22652	19D								700	
22653	20S								500	
22654	20D								1200	
22655.	22								2950	

RESULTS CALCULATED BY: A-Scott

Signature:

APPROVED BY: M. Van Dyke

Signature: Michele Van

Date Issued: Sept 07/00

PA = Presence Absence, TC = Total Coliforms, EC = E. coli; FC = Faecal Coliforms, FS = Faecal Streptococci; PSA = Pseudomonas aeruginosa, CP = Clostridium perfringens; HPC = Heterotrophic Plate Count

L=Less Than; G=Greater Than, A=Approximate Value; C=Crowded Filter, LA=Laboratory Accident, NR=No Result

A401

CHAIN OF CUSTODY

Client: Golder Associates
Contact: Dan Brown
Address: 500 Nottinghill Road
London
Phone: 471-9600 Fax:
Project: 001-3105
PO #: Quote #:

Page 1 of 1

GAP EnviroMicrobial Services
1020 Hargrieve Road, Unit M
London, Ontario Canada N6E 1P5

Tel.: (519) 681-0571
Fax: (519) 681-7150
Toll Free: 1-800-660-9771

ANALYSES REQUESTED — Please Check Analysis Requested

SAMPLE IDENTIFICATION (Collection Site or ID Number)	Matrix (Water, Soil, Food, etc.)	Heterotrophic Plate Count	Total Coliforms	Escherichia coli	Pseudomonas aeruginosa	Clostridium perfringens	Fecal Streptococci	Cryptosporidium/Giardia	Yeasts/Moulds	Aerobic Spores			Date/Time Collected	Raw Finished	Chlorine Residual	Laboratory Sample Number
Well 6, Sept 6 7:45p.m.	Water									✓			Sept 6			23236
Well 7, Sept 6 7:45p.m.										✓			Sept 6			23237
00-175										✓			Sept 7			23238
00-170										✓						23239
00-183										✓						23240
00-180										✓						23241
00-195										✓						23242
00-190										✓						23243
00-205										✓						23244
00-200										✓						23245
00-22										✓						23246

PLEASE FILL IN AREAS BELOW

Turnaround Required
☐ Normal (5-10 Working Days)
☑ Rush (Specify below)
Date:
Time:

Report Options
☐ Fax Results
☐ Mail Results
☐ Call Results
☐ Fax and mail

Special Instructions:

Collected by: Golder
Name (print):
Relinquished:
Received by:
Date: Time:
Relinquished to Laboratory
Name (print):

LABORATORY USE ONLY

Received by: A. Scott
Date: 7-9-00 Time: 4:43p.
Condition & Comments:
Signature:

SAMPLE SUBMISSION FORM AND FINAL RESULTS

GAP EnviroMicrobial Services Inc.

Phone: (519) 681-0571

Fax: (519) 681-7150

MUNICIPALITY: Golder Assoc.	DATE RECEIVED: SEP 7 2000	REPORT TO:	INVOICE TO:
	RECEIVED BY: D. Dodge.	ADDRESS:	ADDRESS:
SOURCE:	COMMENTS:	PHONE:	PHONE:
DATE SAMPLED:	DATE ANALYZED: SEP 8 2000	FAX:	FAX:

LAB #	SENDERS #	SITE DESCRIPTION (sampling location, time, etc.)	Chlorine Residual (mg/L)	PA	TC	EC	FC	FS	PSA	CP	HPC	TAS
				Check Required Tests PA = Presence Absence, Others Membrane Filtration								
23236		Well 6 Sep6 7:45p										x
23237		Well 7 Sep6 7:45p										x
23238		00-17S										x
23239		00-17D										x
23240		00-18S										x

LAB #	SENDERS #	Total Coliforms	Background	Escherichia coli	Faecal Coliforms	Faecal Streptococci	Pseudomonas aeruginosa	Clostridium perfringens	Heterotrophic Plate Count	COMMENTS:
		RESULTS - BACTERIA PER 100 MILLILITRES (mL)							PER mL	TAS/500mL
23236										1
23237										0
23238										4000
23239										400
23240										50

RESULTS CALCULATED BY:

Signature:

APPROVED BY: A. Scott

Signature:

Date Issued: 11·9·00

PA = Presence-Absence, TC = Total Coliforms; EC = E. coli; FC = Faecal Coliforms; FS = Faecal Streptococci; PSA = Pseudomonas aeruginosa, CP = Clostridium perfringens; HPC = Heterotrophic Plate Count

L=Less Than; G=Greater Than; A=Approximate Value; C=Crowded Filter; LA=Laboratory Accident; NR=No Result

GAP EnviroMicrobial Services Inc., 1020 Hargrieve Rd., #14, London, Ontario, N6E 1P5 TOLL FREE: 1-800-680-9771 EXCEL,P:/FORMSQM,SUBREPREV7, Revision 7, August 1, 2000

RUSH

A401

P2 of 3

Phone: (519) 681-0571

SAMPLE SUBMISSION FORM AND FINAL RESULTS

GAP EnviroMicrobial Services Inc.

Fax: (519) 681-7150

MUNICIPALITY:

SOURCE:

DATE SAMPLED:

DATE RECEIVED: SEP 7 2000

RECEIVED BY: J. Dudge

COMMENTS:

DATE ANALYZED: SEP 8 2000

REPORT TO:

ADDRESS:

PHONE:

FAX:

INVOICE TO:

ADDRESS:

PHONE:

FAX:

LAB #	SENDERS #	SITE DESCRIPTION (sampling location, time, etc.)	Chlorine Residual (mg/L)	PA	TC	EC	FC	FS	PSA	CP	HPC	TAS
				Check Required Tests PA = Presence Absence, Others Membrane Filtration								
23241		00-18D										x
23242		00-19S										x
23243		00-19D										x
23244		00-20S										x
23245		00-20D										x

LAB #	SENDERS #	RESULTS - BACTERIA PER 100 MILILITRES (mL) Total Coliforms	Background	*Escherichia coli*	Faecal Coliforms	Faecal Streptococci	*Pseudomonas aeruginosa*	*Clostridium perfringens*	PER mL Heterotrophic Plate Count	COMMENTS: TAS/500ml
23241										23000
23242										1900
23243										150
23244										1250
23245										4200

RESULTS CALCULATED BY:

Signature:

APPROVED BY M Scott

Signature:

Date Issued: 11-9-00

PA = Presence-Absence, TC = Total Coliforms; EC = E. coli; FC = Faecal Coliforms; FS = Faecal Streptococci; PSA = Pseudomonas aeruginosa; CP = Clostridium perfringens; HPC = Heterotrophic Plate Count

L=Less Than; G=Greater Than; A=Approximate Value; C=Crowded Filter; LA=Laboratory Accident, NR=No Result

GAP EnviroMicrobial Services Inc., 1020 Hargrieve Rd., #14, London, Ontario, N6E 1P5 TOLL FREE: 1-800-680-9771

EXCEL,P:/FORMSQ4,SUBREPREV7, Revision 7, August 1, 2000

RUSH

6741 P3 of 3

SAMPLE SUBMISSION FORM AND FINAL RESULTS

GAP EnviroMicrobial Services Inc.

Phone: (519) 681- 0571

Fax: (519) 681-7150

MUNICIPALITY: Golder Assoc.

SOURCE:

DATE SAMPLED:

DATE RECEIVED: SEP 7 2000

RECEIVED BY: J. Dodge

COMMENTS:

DATE ANALYZED: SEP 8 2000

REPORT TO:

ADDRESS:

PHONE:

FAX:

INVOICE TO:

ADDRESS:

PHONE:

FAX:

LAB #	SENDERS #	SITE DESCRIPTION (sampling location, time, etc.)	Chlorine Residual (mg/L)	Check Required Tests PA = Presence Absence, Others Membrane Filtration PA	TC	EC	FC	FS	PSA	CP	HPC	TAS
23246		00-22										x
												x
												x
												x
												X

LAB #	SENDERS #	RESULTS - BACTERIA PER 100 MILILITRES (mL) Total Coliforms	Background	*Escherichia coli*	Faecal Coliforms	Faecal Streptococci	*Pseudomonas aeruginosa*	*Clostridium perfringens*	PER mL Heterotrophic Plate Count	COMMENTS: TAS/500ml
23246										7650

RESULTS CALCULATED BY:

Signature:

APPROVED BY: A. Scott

Signature:

Date Issued: 11-9-00

PA = Presence-Absence; TC = Total Coliforms; EC = E. coli; FC = Faecal Coliforms; FS = Faecal Streptococci; PSA = Pseudomonas aeruginosa; CP = Clostridium perfringens; HPC = Heterotrophic Plate Count

L=Less Than; G=Greater Than; A=Approximate Value, C=Crowded Filter, LA=Laboratory Accident, NR=No Result

RUSH

[redacted] .vir[redacted]nta[redacted]rk C[redacted] / C[redacted]

MDS LABORATORY SERVICES

Client: Golder Associates Ltd.
Contact: Dan Brown
Address: 500 Nottinghill Rd.
London ON N6K 3P1
Phone: 471-9600
Fax: 471-4707
Project: 001-3105.

Sample type ☐ Treated/Distribution ☒ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☑ E.coli ☑ Total Coliform ☐ Fecal Coliform
☐ Other:

MDS Laboratory Services is a CAEAL Accredited Laboratory

Page 1 of 1

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4800
Fax: (519) 672-8379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	001-3105 BH00-4D Sa1A ☐ HPC	July 27/00	4 ✓	210 ✓					HD.010.441-0
	001-3105 BH00-4D Sa1B ☐ HPC	"	<1 ✓	20 ✓					HD.010.442-1
	001-3105 BH00-5 Sa 1A ☐ HPC	"	2 ✓	40 ✓					HD.010.443-2
	001-3105 BH00-5 Sa 1B ☐ HPC	"	<1 ✓	20 ✓					HD.010.444-3
	001-3105 BH00-6D Sa 1A ☐ HPC	"	<1 ✓	70 ✓					HD.010.445-4
	001-3105 BH00-6D Sa 1B ☐ HPC	"	<1 ✓	< ✓					HD.010.446-5
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								

Sampler: T.B. Pallop.
Date: July 27/00
Comm'ts: Soil Samples

FOR LABORATORY USE ONLY

Client Number: 158024
Date/Time Rec: July 28/00 1148
Temp. on Rec'l:
Rec'l Condition:
Received By:

Analysis Date: July 28/00 3:20pm
Report Status: ☐ PARTIAL ☑ FINAL
Analyst: Cheng
Analyst: R. Clearwood
Date: July 29/00

Certificates of analysis are faxed only unless otherwise requested

LABORATORY ORDER FORM / CERTIFICATE OF ANALYSIS ALL ANALYSIS PERFORMED BY STANDARD METHODS. MDS LABORATORY SERVICES LONDON IS A CAEAL ACCREDITED LABORATORY

MDS LABORATORY SERVICES

Environmental Work Order / Certificate of Analysis

Client: Golder_London
Contact: D. Brown
Address:
Phone: 471-9600
Fax: 471-4707
Project: 001-3105

Sample type ☐ Treated/Distribution ☐ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☐ E.coli ☐ Total Coliform ☐ Fecal Coliform
☐ Other:

MDS Laboratory Services is a CAEAL Accredited Laboratory

Page 1 of 1

MDS LABORATORY SERVICES
748 Baseline Road East
London, Ont. Can. N6C 2R8
Phone: (519) 672-4500
Fax: (519) 672-9379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	BH 00-7D S.1A ☐ HPC	Jul 28/00	10 ✓	2800 ✓					HD.011.350-0
	BH 00-7D S.1B ☐ HPC	1:00pm	<10 ✓	<10 ✓					HD.011.359-0
	BH 00-8D S.1A ☐ HPC		<10 ✓	1000 ✓					HD.011.360-1
	BH 00-8D S.1B ☐ HPC		<10 ✓	30 ✓					HD.011.361-2
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								

Sampler: T. Phillips
Date: Jul 28/00
Comm'ts:

Certificates of analyses are faxed only, unless otherwise requested

FOR LABORATORY USE ONLY

Client Number:
Date/Time Rec: July 29/00
Temp. on Rec't: OK
Rec'l Condition: OK
Received By: DWO

Analysis Date: July 29/00 3:00pm
Report Status: ☐ PARTIAL ☑ FINAL
Analyst: [illegible]
Analyst:
Date: July 31/00

THIS DOCUMENT IS UTILIZED AS BOTH A WORK ORDER FORM / CERTIFICATE OF ANALYSIS. ALL ANALYSIS PERFORMED BY STANDARD METHODS. MDS LABORATORY SERVICES LONDON IS A CAEAL ACCREDITED LABORATORY.

LAB ITO ER S ntal k Order / Ce of Analysis

Client: Golder Assoc.
Contact: Toivo Pallop
Address: London
Phone: 471-9600
Fax: 471-4707
Project: Walkerton 001.3105

Sample type ☐ Treated/Distribution ☐ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☑ E.coli ☑ Total Coliform ☐ Fecal Coliform
☐ Other:

MDS Laboratory Services is a CAEAL Accredited Laboratory

Page __ of __

MDS LABORATORY SERVICES
748 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-9379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	001-3105 BH00-9D Sa 1A ☐ HPC	July 31, 00	< 10	70			*		IID.014.303-0
	" Sa 1B ☐ HPC	" "	< 10	150			*		IID.014.304-1
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								* reported as
	☐ HPC								cfu / 1gram
	☐ HPC								
	☐ HPC								

Sampler: Toivo Pallop
Date: July 31, 00
Comm'ts:

Certificates of analysis are faxed only, unless otherwise requested

FOR LABORATORY USE ONLY

Client Number: 152004
Date/Time Rec: Aug 1/00 8am
Temp. on Rec't: 8c
Rec'd Condition: ok
Received By:

Analysis Date: Aug 1/00 11:15
Report Status: ☐ PARTIAL ☑ FINAL
Analyst:
Analyst:
Date: Aug 2/00

THIS DOCUMENT IS UTILIZED AS BOTH A WORK ORDER FORM / CERTIFICATE OF ANALYSIS. ALL ANALYSIS PERFORMED BY STANDARD METHODS. MDS LABORATORY SERVICES LONDON IS A CAEAL ACCREDITED LABORATORY

DS LABORATORY SERVICES

Environmental Work Order /

Client: GOLDER ASSOCIATES
Contact: DAN BROWN
Address: 500 NORTHWESTHILL RD
Phone: 471-9600
Fax:
Project: 001-3105

Sample type ☐ Treated/Distribution ☑ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☑ E.coli ☑ Total Coliform ☐ Fecal Coliform
☐ Other:

MDS Laboratory Services is a CAEAL Accredited Laboratory

Page 1 of 1

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-8379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	00·10D·1A ☐ HPC	Aug 1, 2000	<10 ✓	139 ✓					IID.014.607-0
	00 10D·1B ☐ HPC	Aug 1, 2000	<10 ✓	✓<10					IID.014.500-0
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								

Sampler: T. Pallol
Date: Aug. 1, 2000
Comm'ts: Soil samples

Certificates of analysis are faxed only, unless otherwise requested

FOR LABORATORY USE ONLY

Client Number:
Date/Time Rec: Aug 1/00 2:25 pm
Temp. on Rec't: OK
Rec't Condition: OK
Received By:

Analysis Date: Aug 1/00 5:00pm
Report Status: ☐ PARTIAL ☑ FINAL
Analyst:
Analyst:
Date: Aug 2/00

[illegible] IT IS [illegible] AS [illegible] WORK ORDER FORM / CERTIFICATE OF ANALYSIS. ALL ANALYSES PERFORMED BY STANDARD METHODS. MDS LABORATORY SERVICES LONDON IS A CAEAL ACCREDITED LABORATORY

MDS LABORATORY SERVICES Environmental Work Order / Certificate of Analysis

Client: Golder Associates-London
Contact: Dan Brown
Address: 500 Nottinghill Rd
London
Phone: 471-9600
Fax: 471-4701
Project: 001-3105

Sample type ☐ Treated/Distribution ☐ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☐ E.coli ☐ Total Coliform ☐ Fecal Coliform
☐ Other:

MDS Laboratory Services is a CAEAL Accredited Laboratory

Page 1 of 1

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-8379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	BH 00-11D Sa 1A ☐ HPC	Aug 11/00	✓ 70	✓ 1600					HD.024.452-7
	BH 00-11D Sa 1B ☐ HPC	Aug 11/00	✓ <10	✓ <10					HD.024.453-8
	BH 00-10D Sa 1A ☐ HPC	Aug 11/00	✓ 940	✓ 7400					HD.024.454-0
	BH 00-12D Sa 1B ☐ HPC	Aug 11/00	✓ <10	✓ 80					HD.024.455-1
	BH 00-12D Sa 1C ☐ HPC	Aug 11/00	✓ <10	✓ <10					HD.024.456-2
	☐ HPC		cfu/g	cfu/g.					
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								

Sampler: T. Palkoo
Date: Aug 11/00
Comm'ts:

Certificates of analysis are faxed only, unless otherwise requested

FOR LABORATORY USE ONLY

Client Number: 152004
Date/Time Rec: Aug 11/00 5:15 PM
Temp. on Rec't: O.K.
Rec't Condition: O.K.
Received By: TMK

Analysis Date: Aug 11/00 6:00 PM
Report Status: ☐ PARTIAL ☑ FINAL
Analyst: Al. Alvarez
Analyst:
Date: Aug 12/00

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Client: Golder & Associates
Contact: 500 Nottinghill Rd
Address: London, ON
N6K 3P1
Phone: 471-9000
Fax: 471-4707
Project:

Sample type ☐ Treated/Distribution ☐ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☑ E.coli ☑ Total Coliform ☐ Fecal Coliform
☐ Other:

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Page ___ of ___

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-0379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	Water ☐ HPC		70	12000					IID.016.357-3
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								

Sampler:
Date: Aug 2/00
Comm'ts:

Certificates of analysis are faxed only, unless otherwise requested

FOR LABORATORY USE ONLY

Client Number: 152004
Date/Time Rec: Aug 3/00 9:00am
Temp. on Rec't: Ok
Rec't Condition: Ok
Received By: AM

Analysis Date: Aug 3/00 11:40am
Report Status: ☐ PARTIAL ☑ FINAL
Analyst: N. Chummard
Analyst:
Date: Aug 4/00

Client: GOLDER & ASSOCIATES
Contact: DAN BROWN
Address: 500 NOTTINGHILL RD.
LONDON, ONT. N6K 3P1
Phone: 471-9600
Fax: 471-4707
Project:

Sample type ☐ Treated/Distribution ☐ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25% Tr. or ☑ HPC/sample
☑ E.coli ☑ Total Coliform ☐ Fecal Coliform
☐ Other:

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Page ___ of ___

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-9379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
BH4D	001-3105 Sa3 ☐ HPC		<10	<10					IID.024.417-8
DW 4D	001-3105 Sa2 ☐ HPC		<10	<10					IID.024.410-0
	☐ HPC		cfu/g	cfu/g.					
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								

Sampler: ______
Date: ______
Comm'ts: ______

Certificates of analysis are faxed only, unless otherwise requested

FOR LABORATORY USE ONLY

Client Number: 152004
Date/Time Rec: Aug 11/00 9:25am
Temp. on Rec't: OK
Rec't Condition: OK
Received By: S

Analysis Date: Aug 11/00 10^{30}am
Report Status: ☐ PARTIAL ☑ FINAL
Analyst:
Analyst:
Date: Aug 12/00

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Client: GOLDER ASSOCIATES
Contact: DAN BROWN
Address: 500 NOTTINGHILL RD
LONDON
Phone: 471.9600
Fax: 471.4707
Project: 001-3105

Sample type ☐ Treated/Distribution ☑ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☑ E.coli ☑ Total Coliform ☐ Fecal Coliform
☐ Other:

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Page 1 of 1

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-0379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	TW1 (liquid) ☐ HPC	Aug 14, '00	<1	<1					HD.020.443-2
	TW2 (liquid) ☐ HPC	Aug 14, '00	<1	6800					HD.020.444-3
	82·1 (liquid) ☐ HPC	Aug 14, '00	<1	8600					HD.020.445-4
	82·2 (liquid) ☐ HPC	Aug 14, '00	<1	<1					HD.020.446-5
	BH00·12D·Sa2A (soil) ☐ HPC	Aug 14, '00	<10	<10			*		HD.020.447-6
	BH00·11D·Sa2 (soil) ☐ HPC	Aug 14, '00	<10	<10			*		HD.020.448-7
	BH00·12D·Sa2B (soil) ☐ HPC	Aug 14, '00	<10	<10			*		HD.020.449-0
	BH00·12D·Sa3A (soil) ☐ HPC	Aug 14, '00	<10	<10			*		HD.020.450-0
	☐ HPC								*CFU/1g.
	☐ HPC								

Sampler: T. Paul
Date: Aug. 14. 2000
Comm'ts:

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FOR LABORATORY USE ONLY

Client Number:
Date/Time Rec: Aug 15/00 9:30am
Temp. on Rec't: OK
Rec't Condition: OK
Received By: DAO

Analysis Date: Aug 15/00 8:00pm
Report Status: ☐ PARTIAL ☑ FINAL
Analyst:
Analyst:
Date: Aug 16/00

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AB TO RV

Page 1

Client: GOLDER ASSOCIATES
ontact: DAN BROWN
ddress: 500 NOTTINGHILL RD.
LONDON
Phone: 471-9620
Fax: 471-4707
Project: 001-3105

Sample Type ☐ Treated/Distribution ☐ Untreated/

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☑ E.coli ☑ Total Coliform ☐ Fecal Coliform
☐ Other:

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MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-8379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)		Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	BH 00-5 Sa 2A	☐ HPC	Aug15,'00	<10*	10*					IID.023.477-1
		☐ HPC								*cFu/ 1gram
		☐ HPC								
		☐ HPC								
		☐ HPC								
		☐ HPC								
		☐ HPC								
		☐ HPC								
		☐ HPC								
		☐ HPC								

Sampler: T. PALLOT
Date: AUG. 15, 2000
Comm'ts: — Soil.

FOR LABORATORY USE ONLY

Client Number: 152004
Date/Time Rec: Aug15/00 8:30pm
Temp. on Rec't: OK
Rec't Condition: OK
Received By: [illegible]

Analysis Date: Aug 17/00 1030.
Report Status: ☐ PARTIAL ☑ FINAL
Analyst:
Analyst:
Date: Aug 18/00

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Environmental Work Order / Certificate of Analysis

DS LABORATORY SERVICES

Client: Golder Assoc.
ontact: Dan Brown
ddress:
Phone: 471-9600
Fax: 471-4707
Project: 001-3105

Sample type ☐ Treated/Distribution ☒ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25% Tr. or ☑ HPC/sample
☒ E.coli ☒ Total Coliform ☐ Fecal Coliform
☐ Other:

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MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-9379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	BH00-4D ☐ HPC	Aug 17/00	1	8					HD.031.405-2
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								

Sampler: T. Palley
Date: Aug 17/00
Comm'ts:

FOR LABORATORY USE ONLY

Client Number: 152034
Date/Time Rec'd: Ag 21/00 9am
Temp. on Rec't: OK
Rec't Condition: OK
Received By:

Analysis Date: Ag 18/00 16
Report Status: ☑ PARTIAL ☐ FINAL
Analyst:
Analyst:
Date:

Certificates of analysis are faxed only, unless otherwise requested

CERTIFICATE OF ANALYSIS. ALL ANALYSES PERFORMED BY STANDARD METHODS. MDS LABORATORY SERVICES LONDON IS A CAEAL ACCREDITED LABORATORY

Client: Golder Assoc. Ltd.
Contact: Dan Brown
Address: 500 Nothinghill Rd.
London. ON.
Phone: 471-9600
Fax: 471-4107
Project: 001-3105.

Sample type ☐ Treated/Distribution ☒ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25% Tr. or ☑ HPC/sample
☑ E.coli ☑ Total Coliform ☐ Fecal Coliform
☐ Other:

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Page 1 of 1

MDS LABORATORY SERVICES
740 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-9379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	BH00-17D Sa 1A ☐ HPC		<10	30 ✓					HD.835.563-3
	BH00-17D Sa 2A ☐ HPC		<10 ✓	<10 ✓					HD.835.564-4
	BH00-17D Sa 2B ☐ HPC		<10 ✓	<10 ✓					HD.835.565-5
	BH00-17D Sa 3A ☐ HPC		<10 ✓	10 ✓					HD.835.566-6
	BH00-18D Sa 1A ☐ HPC		<10 ✓	<10 ✓					HD.835.567-7
	BH00-18D Sa 1B ☐ HPC		<10 ✓	10 ✓					HD.835.568-8
	BH00-18D Sa 2 ☐ HPC		<10 ✓	<10 ✓					HD.835.569-0
	BH00-19D Sa 1A ☐ HPC		<10 ✓	<10 ✓					HD.835.570-1
	BH00-19D Sa 1B ☐ HPC		<10 ✓	<10 ✓					HD.835.571-2
	☐ HPC				* reported cfu/1gram				

Sampler: R. Axford
Date:
Comm'ts:

Certificates of analysis are faxed only, unless otherwise requested

FOR LABORATORY USE ONLY:
Client Number: 35804
Date/Time Rec: Aug 22/00 4:05 pm
Temp. on Rec't: OK
Rec't Condition: OK
Received By:
Analysis Date: Aug 22/00 16:00 pm
Report Status: ☐ PARTIAL ☑ FINAL
Analyst: Gueret
Analyst:
Date: Aug 23/00

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MDS LABORATORY SERVICES

Environmental Work Order / Certificate of Analysis

Client: Golder Assoc. Ltd.
Contact: Dan Brown
Address:
Phone: 471-9600
Fax: 471-4707
Project: 001-3105

Sample type ☐ Treated/Distribution ☐ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☑ E.coli ☑ Total Coliform ☐ Fecal Coliform
☐ Other:

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Page 1 of 1

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-8379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	BH00-19D Sa 2A ☐ HPC	Aug 23/00	10 ✓	✓30					HD.036.675-0
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								

Sampler: R. VanKoort
Date: Aug 23/00
Comm'ts:

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FOR LABORATORY USE ONLY

Client Number: 3058004
Date/Time Rec: Aug 23/00 4pm
Temp. on Rec't: OK
Rec't Condition: OK
Received By:

Analysis Date: Aug 23/00 8am
Report Status: ☐ PARTIAL ☑ FINAL
Analyst:
Analyst:
Date: Aug 24/00

MDS LABORATORY SERVICES

Environmental Work Order / Certificate of Analysis

Client: Golder Assoc. Ltd.
Contact: Dan Brown
Address:
Phone: 471-9600
Fax: 471-4707
Project:

Sample type ☐ Treated/Distribution ☒ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☑ E.coli ☑ Total Coliform ☐ Fecal Coliform
☐ Other:

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MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-9379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	BH00-20 SalA ☐ HPC	Aug 23/00	<10 ✓	1600 ✓					IID.837.458-8
	BH00-20 SalB ☐ HPC	Aug 23/00	<10 ✓	<10 ✓					IID.837.459-0
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								

Sampler: R. Axford
Date: Aug 23/00
Comm'ts:

FOR LABORATORY USE ONLY
Client Number: 315804
Date/Time Rec: Aug 24/00 10am
Temp. on Rec't: OK
Rec't Condition: OK
Received By:
Analysis Date: Aug 24/00 12am
Report Status: ☐ PARTIAL ☑ FINAL
Analyst:
Analyst:
Date: [illegible]

TOTAL P.02

MDS LABORATORY SERVICES

Environmental Work Order / Certificate of Analysis

Client: Golder Assoc. Ltd.
Contact: Dan Brown
Address:
Phone: 471-9600
Fax: 471-4707
Project: 001-3105

Sample type ☐ Treated/Distribution ☒ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☑ E.coli ☑ Total Coliform ☐ Fecal Coliform
☐ Other:

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Page 1 of 1

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-8379
Toll Free: 1-877-548-8080

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	BH00-21 Sa 1A ☐ HPC	Aug24/00	<10 ✓	110 ✓					HD.838.367-0
	BH00-21 Sa 1B ☐ HPC	"	<10 ✓	<10 ✓					HD.838.368-0
	BH00-22 Sa 1A ☐ HPC	"	<10 ✓	40 ✓					HD.838.369-1
	BH00-22 Sa 1B ☐ HPC	"	<10 ✓	<10 ✓					HD.838.370-2
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								* Reported cfu/1gram
	☐ HPC								

Sampler: Aug 24,00
Date: Toivo Pallop
Comm'ts:

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FOR LABORATORY USE ONLY

Client Number: 715 304
Date/Time Rec'd: Aug 25/00 9:15am
Temp. on Rec't: O.K.
Rec't Condition: O.K.
Received By: Tom

Analysis Date: Aug 25/00 10:00 am
Report Status: ☐ PARTIAL ☑ FINAL
Analyst:
Analyst:
Date: Aug 26/00

[illegible] CERTIFICATE OF ANALYSIS [illegible] ANALYSIS PERFORMED BY STANDARD METHODS. MDS LABORATORY SERVICES LONDON IS A CAEAL ACCREDITED LABORATORY

LA[illegible]AT[illegible] SE[illegible]ES [illegible] nvi[illegible]ent[illegible]ork [illegible]r / C[illegible]cat[illegible]nal[illegible]

Client: Golder & Assoc.
Contact: Dan Brown
Address: 300 Northyhill Rd
London, Ont N6K 3P1
Phone: 471-9600
Fax: 471-4707
Project: 001-3105

Sample type ☐ Treated/Distribution ☐ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☑ E.coli ☑ Total Coliform ☐ Fecal Coliform
☐ Other:

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MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-0379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	001-3105 H Water ☐ HPC		< 1	< 1					IID.000.610-5
	~~001-3105~~ ☐ HPC								
	Decon Swab ☐ HPC		< 10/swab	< 10/swab					IID.000.611-6
	☐ HPC								
	001-3105 Filter Sand ☐ HPC		< 10/1gram	< 10/1gram					IID.000.612-7
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								

GOLDER ASSOCIATES
RECEIVED — LONDON
JUL 28 2000

Sampler:
Date: July 26/00
Comm'ts:

Certificates of analysis are faxed only, unless otherwise requested

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Client Number: ~~[illegible]~~
Date/Time Rec: July 26/00 2pm
Temp. on Rec't: OK
Rec't Condition: OK
Received By:

Analysis Date: July 26/00 5:10pm
Report Status: ☐ PARTIAL ☑ FINAL
Analyst:
Analyst:
Date: July 27/00

[illegible]ENT IS UTILIZED AS BOTH A WORK ORDER FORM / CERTIFICATE OF ANALYSIS. ALL ANALYSIS PERFORMED BY STANDARD METHODS. MDS LABORATORY SERVICES LONDON IS A CAEAL ACCREDITED LABORATORY

MDS LABORATORY SERVICES

Environmental Work Order / Certificate of Analyses

Client: Golder Assoc. Ltd.
Contact: Dan Brown
Address: 500 Nottinghill Rd.
London, ON N6K 3P1
Phone: 471-9600
Fax: 471-4707
Project: 001-3105

Sample type ☐ Treated/Distribution ☑ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) MF - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☑ E.coli ☑ Total Coliform ☐ Fecal Coliform
☐ Other:

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MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-8379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	001-3105 BH00-1S Sa 1A ☐ HPC	July 25/00	<1 ✓	✓ <1			#		IID.809.424-0
	001-3105 BH00-1S Sa 1B ☐ HPC	"	<10 ✓	✓ <10			#	Detection limit due to high background.	IID.009.425-1
	001-3105 BH00-2S Sa 2 ☐ HPC	July 26/00	<1 ✓	✓ 2			#		IID.009.426-2
	001-3105 BH00-2D Sa 1 ☐ HPC	"	<1 ✓	✓ 3			#		IID.009.427-3
	001-3105 BH00-2D Sa 1B ☐ HPC	"	<1 ✓	✓ <1			#		IID.009.428-4
	001-3105 BH00-3D Sa 1A ☐ HPC	"	<1 ✓	✓ 19			#		IID.009.429-5
	001-3105 BH00-3D Sa 1B ☐ HPC	"	<1 ✓	✓ <1			#		IID.809.430-6
	001-3105 Grout ☐ HPC	"	<10 ✓	✓ <10			#		IID.009.431-7
	☐ HPC								# All reported per 1gm
	☐ HPC								

Sampler: T. Pallop
Date: July 25/26, 2000
Comm'ts:

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FOR LABORATORY USE ONLY

Client Number: 158009
Date/Time Rec: July 26/00 10:30
Temp. on Rec't: [illegible]
Rec't Condition: ok
Received By: [illegible]

Analysis Date: July 27/00
Report Status: ☐ PARTIAL ☑ FINAL
Analyst: [illegible]
Analyst:
Date: July 28/00

[illegible] CERTIFICATE OF ANALYSIS. ALL ANALYSIS PERFORMED BY STANDARD METHODS. MDS LABORATORY SERVICES LONDON IS A CAEAL ACCREDITED LABORATORY

Client: Golder Assoc. Ltd.
Contact: Dan Brown
Address:
Phone: 471-9600
Fax: 471-4707
Project: 001-3105

Sample type ☐ Treated/Distribution ☑ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☑ E.coli ☑ Total Coliform ☐ Fecal Coliform
☐ Other:

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Page 2 of 2

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-8379
Toll Free: 1-877-840-8060

ID NO.	Sample ID (Identification of collection site)		Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	MW00-2S	☐ HPC	Aug 26/00	<100 ✓	<100 ✓			*		IID.039.365-7
	MW00-2D	☐ HPC	"	<10 ✓	<10 ✓			*		IID.039.366-0
	MW00-6S	☐ HPC	"	<100 ✓	<100 ✓			*		IID.039.367-0
	MW00-6D	☐ HPC	"	<100 ✓	400 ✓			*		IID.039.368-1
	H-Water	☐ HPC	"	<10 ✓	<10 ✓			*		IID.039.369-2
		☐ HPC								
		☐ HPC								* Poor detection limits due to high background counts and/or viscous sample matrix.
		☐ HPC								
		☐ HPC								
		☐ HPC								

Sampler: R. VANTFOORT
Date: Aug. 26/00
Comm'ts:

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Client Number: 315904
Date/Time Rec: Aug 27/00 10:00 AM
Temp. on Rec'd: O.K.
Rec'd Condition: O.K.
Received by:

Analysis Date: Aug 27/00 2:00 PM
Report Status: ☐ PARTIAL ☑ FINAL
Analyst:
Analyst:
Date: [illegible]

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MDS LABORATORY SERVICES

Environmental Work Order / Certificate of Analysis

Client: Golder Assoc. Ltd.
Contact: Den Brown
Address:
Phone: 471-9600
Fax: 471-4707
Project: 001-3105

Sample type ☐ Treated/Distribution ☑ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☑ E.coli ☑ Total Coliform ☐ Fecal Coliform
☐ Other:

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Page 1 of 2

MDS LABORATORY SERVICES
748 Baseline Road East
London, Ont. Can. N6C 2R8
Phone: (519) 672-4500
Fax: (519) 672-9379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	RINSE ☐HPC	Aug 26/00	<1 ✓	<1 ✓					HD.039.355-6
	MW00-8D ☐HPC	"	<10* ✓	<10* ✓					HD.039.356-7
	MW00-8S ☐HPC	"	<10* ✓	460 ✓					HD.039.357-8
	MW00-7D ☐HPC	"	<10* ✓	10 ✓					HD.039.358-0
	MW00-7S ☐HPC	"	<100* ✓	<100* ✓					HD.039.359-1
	MW00-1S ☐HPC	"	<100* ✓	<100* ✓					HD.039.360-2
	MW00-1D ☐HPC	"	<10* ✓	<10* ✓					HD.039.361-3
	MW00-3S ☐HPC	"	<100* ✓	<100* ✓					HD.039.362-4
	MW00-3D ☐HPC	"	<10* ✓	<10* ✓					HD.039.363-5
	MW00-5 ☐HPC	"	<100* ✓	<100* ✓					HD.039.364-6

GOLDER ASSOCIATES
AUG 29 2000
RECEIVED — LONDON

Sampler: R. VANTFOORT
Date: Aug 26/00
Comm'ts:

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FOR LABORATORY USE ONLY

Client Number: 315804
Date/Time Rec'd: Aug 27/00 10:00 am
Temp. on Rec'd: [illegible]
Rec'd Condition: O.K.
Received by: JAM

Analysis Date: Aug 27/00 2:00 pm
Report Status: ☐ PARTIAL ☑ FINAL
Analyst: [illegible]
Analyst:
Date: [illegible]

[illegible] CERTIFICATE OF ANALYSIS. ALL ANALYSES PERFORMED BY STANDARD METHODS. MDS LABORATORY SERVICES LONDON IS A CAEAL ACCREDITED LABORATORY

3 LABORATORY SERVICES

Environmental Work Order

Page 1 of 1

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-8379
Toll Free: 1-877-848-8060

lient: Golder Assoc. Ltd.
ntact: Dan Brown
lress: 500 Nottinghill Rd.
London, ON N6K 3P1
hone: 471-9600
Fax: 471-4707
roject: 001-3105

Sample type ☐ Treated/Distribution ☒ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☑ E.coli ☑ Total Coliform ☐ Fecal Coliform
☐ Other:

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D O.	Sample ID (identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	MW00-9D ☐ HPC	Aug 28/00	<10 ✓	10 ✓					IID.042.444-8
	MW00-10S ☐ HPC	"	<10 ✓	100 ✓					IID.042.445-0
	MW00-10D ☐ HPC	"	<10 ✓	10 ✓					IID.042.446-1
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								

Sampler: R. Vantfoort
Date: Aug 28/00
Comm'ts:

Certificates of analysis are faxed only, unless otherwise requested

FOR LABORATORY USE ONLY

Client Number: 150004
Date/Time Rec: Aug 29/00 8:30 a.m.
Temp. on Rec't: 8C
Rec't Condition: OK
Received By:

Analysis Date: AUG 29 /00 2:30p
Report Status: ☐ PARTIAL ☑ FINAL
Analyst: N. Ormerod
Analyst:
Date: Aug 30/00

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MDS LABORATORY SERVICES

Environmental Work Order / Certificate of Analysis

Client: Golder Assoc Ltd.
Contact: Dan Brown
Address:
Phone: 471-9600
Fax: 471-4707
Project: 001-3105

Sample type ☐ Treated/Distribution ☒ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☒ E.coli ☒ Total Coliform ☐ Fecal Coliform
☐ Other:

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Page 1 of 2

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4580
Fax: (519) 672-9379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	MW00-9S ☐ HPC		10	10					IID.843.606-0
	MW00-4S ☐ HPC		<10	<10					IID.843.607-1
	MW00-4D ☐ HPC		<2	4					IID.843.608-2
	MW00-11S ☐ HPC		<10	<10					IID.843.609-3
	MW00-11D ☐ HPC		<1	1					IID.843.610-4
	MW00-12D ☐ HPC		24000	38000					IID.843.611-5
	MW00-17S ☐ HPC		<10	<10					IID.843.612-6
	MW00-17D ☐ HPC		<1 ~~<10~~	<1					IID.843.613-7
	MW00-18S ☐ HPC		<10	<10					IID.843.614-8
	MW00-18D ☐ HPC		<1	<1					IID.843.615-0

Sampler:
Date:
Comm'ts:

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Client Number: 152004
Date/Time Rec: Aug 30/00 11:15am
Temp. on Rec't: [illegible]
Rec't Condition: [illegible]
Received By:

Analysis Date: Aug 31/00 17:30
Report Status: ☐ PARTIAL ☑ FINAL
Analyst:
Analyst:
Date: [illegible] 31 00

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AB /OR RV

Page 2 of 2

Client: Golder Assoc. Ltd.
Contact: Dan Brown
Address: 500 Nottinghill Rd
London
Phone: 471-9600
Fax: 471-4707
Project: 001-3105

Sample type ☐ Treated/Distribution ☒ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☒ E.coli ☒ Total Coliform ☐ Fecal Coliform
☐ Other:

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MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-9379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	MW00-19S ☐ HPC		<10	<10					IID.043.616-1
	MW00-19D ☐ HPC		<2	<2					IID.043.617-2
	MW00-20S ☐ HPC		<4	<4					IID.043.618-3
	MW00-20D ☐ HPC		<2	<2					IID.043.619-4
	MW00-22 ☐ HPC		<10	<10					IID.043.620-5
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								

Sampler:
Date:
Comm'ts:

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Client Number: 152004
Date/Time Rec: Aug 30/00 11:15 am
Temp. on Rec't: OK
Rec't Condition: OK
Received By:

Analysis Date: Aug 30/00 17:30
Report Status: ☐ PARTIAL ☑ FINAL
Analyst:
Analyst:
Date: Aug 31/00

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DS LABORATORY SERVICES

Environmental Work Order / Certificate of Analysis

Client: Golder Assoc Ltd
Contact: Dan Brown.
Address:
Phone: 471-9600
Fax: 471-4707.
Project: 001-3105

Sample type ☐ Treated/Distribution ☒ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☒ E.coli ☒ Total Coliform ☐ Fecal Coliform
☐ Other:

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Page 1 of 1

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-0379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	Well 5.S 2:25 ☐ HPC		<1 ✓	4 ✓	8				HD.044.529-5
	Well 5.D 2:25 ☐ HPC		1	6	14				HD.044.530-6
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								

Sampler: R VonHoort
Date: Aug 31/00.
Comm'ts:

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Client Number: 152024
Date/Time Rec: Aug 31/00 3pm
Temp. on Rec't: 4°
Rec't Condition: ok
Received By: S

Analysis Date: Aug 31/00 3pm
Report Status: ☐ PARTIAL ☑ FINAL
Analyst: [illegible]
Analyst:
Date: Sept 1/00

Certificates of analysis are faxed only, unless otherwise requested

[illegible] WORK ORDER FORM / CERTIFICATE OF ANALYSIS. ALL ANALYSIS PERFORMED BY STANDARD METHODS. MDS LABORATORY SERVICES LONDON IS A CAEAL ACCREDITED LABORATORY

Client: Golder Associates
Contact: Dan Boyan
Address: 500 Nottinghill Rd
Phone: 471-9600
Fax: 471-4707
Project: Walkerton 001-3105

Sample type ☐ Treated/Distribution ☑ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) MF - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☑ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☑ E.coli ☑ Total Coliform ☐ Fecal Coliform
☐ Other:

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Page 1 of 1

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-8379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	Well '5-S' ☑ HPC		<1	1		14			IID.044.492-4
	Well '5-D' ☑ HPC		1	2		120			IID.044.493-5
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								

Sampler: T. Pullop
Date: Aug 30 9:45 AM
Comm'ts:

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Client Number: 315804
Date/Time Rec'd: Aug 31/00 845am
Temp. on Rec't: OK
Rec't Condition: OK
Received By:

Analysis Date: Aug31/00 2:00pm
Report Status: ☐ PARTIAL ☑ FINAL
Analyst:
Analyst: DWO
Date: [illegible]

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MDS LABORATORY SERVICES

Environmental Work Order / Certificate of Analysis

Client: Golder Associates
Contact: D. Brown
Address: 500 Nottinghill Rd
London
Phone: 471-3600
Fax: 471-4707
Project: 001-3105

Sample type ☐ Treated/Distribution ☒ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☒ E.coli ☒ Total Coliform ☐ Fecal Coliform
☐ Other:

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Page __ of __

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-0379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	Well 50 5:17pm ☐ HPC	Aug 31 5:17	<1 ✓	9					HD.045.366-5
	Well 53 8:03am ☐ HPC	Aug 31	<1 ✓	✓ 4					HD.045.367-6
	Well 50 8:01am ☐ HPC	Aug 31	<1 ✓	✓ 6					HD.045.368-7
	Well 55 2:01pm ☐ HPC	Aug 31	<1 ✓	8					HD.045.369-0
	Well 55 5:[illegible] ☐ HPC	Aug 31	<1 ✓	✓ 7					HD.045.370-0
	Well 50 11:[illegible] ☐ HPC	Aug 31	<1 ✓	✓ 8					HD.045.371-1
	Well 50 2:0[illegible] ☐ HPC	Aug 31	<1 ✓	✓ 11					HD.045.372-2
	Well 55 11:16am ☐ HPC	Aug 31	<1 ✓	✓ 9					HD.045.373-3
	Well 55 5:15am ☐ HPC	Aug 31	<1 ✓	✓ 6					HD.045.374-4
	Well 50 5:[illegible] ☐ HPC	Aug 31	<1 ✓	✓ 5					HD.045.375-5

Sampler:
Date: Aug 31/2000
Comm'ts:

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Client Number	315804	Analysis Date:	Sept 1/00 10:30am
Date/Time Rec	Sept. 1/00 9:20am	Report Status:	☐ PARTIAL ☑ FINAL
Temp. on Rec't	OK	Analyst:	[illegible]
Rec't Condition	OK	Analyst:	
Received By	Dwo	Date:	[illegible]

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[redacted]

Client: Golder Assoc. Ltd.
Contact: Dan Brown.
Address:
Phone: 471-9600
Fax: 471-4707
Project: 001-3105

Sample type ☐ Treated/Distribution ☒ Untreated/Raw

- ☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
- ☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
- ☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
- ☑ E.coli ☒ Total Coliform ☐ Fecal Coliform
- ☐ Other:

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Page 1 of 4

MDS LABORATORY SERVICES
748 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-9379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)		Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	MW00-1S	☐ HPC	Sept 1/00	<100 ✓	<100 ✓					HD.846.338-5
	MW00-1D	☐ HPC		<10 ✓	<20 ✓					HD.846.339-6
	MW00-2S	☐ HPC		<100 ✓	700 ✓					HD.846.340-7
	MW00-2D	☐ HPC		900 ✓	2800 ✓					HD.846.341-8
	MW00-3S	☐ HPC		<100 ✓	200 ✓					HD.846.342-9
	MW00-3D	☐ HPC		<100 ✓	<100 ✓					HD.846.343-1
	MW00-4S	☐ HPC		<100 ✓	<100 ✓					HD.846.344-2
	MW00-4D	☐ HPC		<10 ✓	<20 ✓					HD.846.345-3
	MW00-5	☐ HPC		<100 ✓	<100 ✓					HD.846.346-4
	MW00-6S	☐ HPC		<100 ✓	<100 ✓					HD.846.347-5

Sampler: R VanHoort
Date: Sept 1/00
Comm'ts:

Certificates of analysis are faxed only, unless otherwise requested

FOR LABORATORY USE ONLY

Client Number: 315804
Date/Time Rec'd: Sept 2/00 10:00am
Temp. on Rec't: OK
Rec't Condition: OK
Received By: DWD

Analysis Date: Sept 2/00 1:00pm
Report Status: ☐ PARTIAL ☐ FINAL
Analyst:
Analyst:
Date:

THIS DOCUMENT IS UTILIZED AS BOTH A WORK ORDER FORM / CERTIFICATE OF ANALYSIS. ALL ANALYSIS PERFORMED BY STANDARD METHODS. MDS LABORATORY SERVICES LONDON IS A CAEAL ACCREDITED LABORATORY

MDS LABORATORY SERVICES

Environmental Work Order / Certificate of Analysis

Client: Golder Assoc Ltd.
Contact: Dan Brown
Address:
Phone: 471-9680
Fax: 471-4707
Project: 001-3105

Sample type ☐ Treated/Distribution ☒ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☒ E.coli ☒ Total Coliform ☐ Fecal Coliform
☐ Other:

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Page 2 of 4

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N5C 2R6
Phone: (519) 672-4500
Fax: (519) 672-6379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	MW00-6D ☐ HPC	Sept/1/00	<10 ✓	<20 ✓					HD.046.348-6
	MW00-7S ☐ HPC		<100 ✓	<100 ~~5600~~ ✓	DWO				HD.046.349-7
	MW00-7D ☐ HPC		<10 ✓	40 ✓					HD.045.350-0
	MW00-8S ☐ HPC		<100 ✓	5600 ✓					HD.046.351 0
	MW00-8D ☐ HPC		<10 ✓	80 ✓					HD.046.352-1
	MW00-9S ☐ HPC		<100 ✓	900 ✓					HD.046.353-2
	MW00-9D ☐ HPC		<10 ✓	100 ✓					HD.046.354-3
	MW00-10S ☐ HPC		<100 ✓	300 ✓					HD.046.355-4
	MW00-10D ☐ HPC		<10 ✓	<20 ✓					HD.046.356-5
	MW00-11S ☐ HPC		<100 ✓	<100 ✓					HD.046.357-6

Sampler: R VanHoorf
Date: Sept 1/00
Comm'ts:

FOR LABORATORY USE ONLY

Client Number: B15804
Date/Time Rec'd: Sept2/00 10:00am
Temp. on Rec't: OK
Rec't Condition: OK
Received By: DWO

Analysis Date: Sept2/00 1:00pm
Report Status: ☐ PARTIAL ☐ FINAL
Analyst: R. Ormond
Analyst:
Date: Sept5/00

Certificates of analysis are faxed only, unless otherwise requested

THIS DOCUMENT IS UTILIZED AS BOTH A WORK ORDER FORM / CERTIFICATE OF ANALYSIS [illegible]

Environmental Work Order / Certificate of Analysis

Client: Golder Assoc. Ltd.
Contact: Dan Brown
Address:
Phone: 471-9600
Fax: 471-4707
Project: 001-3105

Sample type ☐ Treated/Distribution ☒ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☒ E.coli ☒ Total Coliform ☐ Fecal Coliform
☐ Other:

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Page 3 of 4

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-9379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	MW00 - 11D ☐ HPC	Sept 1/00	<10 ✓	800 ✓					HD.046.358-7
	MW 00 - 12D ☐ HPC	Sept 1/00	6400 ✓	10000 ✓					HD.046.359-8
	Well 5.S 20:00 ☐ HPC	Aug31/00	<1 ✓	2 ✓					HD.046.360-0
	Well 5.D 20:00 ☐ HPC	Aug31/00	<1 ✓	7 ✓					HD.046.361-1
	Well 5.S 23:45 ☐ HPC	Aug 31/00	<1 ✓	7 ✓					HD.046.362-2
	Well 5.D 23:45 ☐ HPC	Aug31/00	<1 ✓	8 ✓					HD.846.363-3
	Well 5.S 02:00 ☐ HPC	Sept 1/00	<1 ✓	10 ✓					HD.046.364-4
	Well 5.D 02:00 ☐ HPC	↓	<1 ✓	12 ✓					HD.846.365-5
	Well 5.S 05:16 ☐ HPC	↓	<1 ✓	15 ✓					HD.846.366-6
	Well 5.D 05:16 ☐ HPC	↓	1 ✓	4 ✓					HD.846.367-7

Sampler: Golder Assoc. Ltd.
Date: Sept 1/00 Aug31/00
Comm'ts:

Certificates of analysis are faxed only, unless otherwise requested

FOR LABORATORY USE ONLY

Client Number: 315804
Date/Time Rec: Sept 1/00 10:00am
Temp. on Rec't: OK
Rec't Condition: OK
Received By:

Analysis Date: Sept 1/00 1:00pm
Report Status: ☐ PARTIAL ☐ FINAL
Analyst:
Analyst:
Date:

THIS DOCUMENT IS UTILIZED AS BOTH A WORK ORDER FORM / CERTIFICATE OF ANALYSIS. ALL ANALYSIS PERFORMED BY STANDARD METHODS. MDS LABORATORY SERVICES LONDON IS A CAEAL ACCREDITED LABORATORY

MDS LABORATORY SERVICES

Environmental Work Order / Certificate of Analysis

Client: Golder Assoc. Ltd.
Contact: Dan Brown
Address:
Phone: 471-9600
Fax: 471-4707
Project: 001-3105

Sample type ☐ Treated/Distribution ☒ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☒ E.coli ☒ Total Coliform ☐ Fecal Coliform
☐ Other:

MDS Laboratory Services is a CAEAL Accredited Laboratory

Page 4 of 4

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-6379
Toll Free: 1-877-849-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	Well 5.S 08:00 ☐ HPC	Sept/1/00	<1 ✓	6 ✓					11D.046.368-8
	Well 5.D 08:00 ☐ HPC	↓	<1 ✓	5 ✓					11D.046.369-0
	Well 5.S 08:45 ☐ HPC		- ✓	- ✓					Did not Receive
	Well 5.D 08:45 ☐ HPC		- ✓	- ✓					〃
	Well 5 08:45 ☐ HPC		1 ✓	9 ✓					11D.046.370-1
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								
	☐ HPC								

Sampler: Golder Assoc. Staff
Date: Sept 1/00
Comm'ts:

Certificates of analysis are faxed only, unless otherwise requested

FOR LABORATORY USE ONLY

Client Number: 315804
Date/Time Rec: Sept 2/00 10:00am
Temp. on Rec't: OK
Rec't Condition: OK
Received By: DLD

Analysis Date: Sept 2/00 1:00pm
Report Status: ☐ PARTIAL ☑ FINAL
Analyst: Al. Ameed
Analyst:
Date: Sept 5/00

THIS DOCUMENT IS USED AS BOTH A WORK ORDER FORM / CERTIFICATE OF ANALYSIS. ALL ANALYSES PERFORMED BY STANDARD METHODS. MDS LABORATORY SERVICES LONDON IS A CAEAL ACCREDITED LABORATORY

Em[illegible] time [illegible] Wo[illegible]der [illegible] tific[illegible] / A[illegible]sis

Client: Golder Assoc. Ltd.
Contact: Don Brown
Address: 500 Nothingtill Rd.
London, ON.
Phone: 471-9600
Fax: 471-4707
Project: 001-3105

Sample type ☐ Treated/Distribution ☒ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☒ E.coli ☒ Total Coliform ☐ Fecal Coliform
☐ Other:

MDS Laboratory Services is a CAEAL Accredited Laboratory

Page 1 of 1

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-0379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	Well 6 Sept 4 1 MIN ☐ HPC		<1	4					HD.849.312-0
	Well 6 Sept 4 4 MIN ☐ HPC		<1	12					HD.849.313-1
	Well 6 Sept 4 20:20 ☐ HPC		<1	<1					HD.849.314-2
	Well 6 Sept 4 23:35 ☐ HPC		<1	<1					HD.849.315-3
	Well 6 Sept 5 02:30 ☐ HPC		<1	26					HD.849.316-4
	Well 6 Sept 5 05:35 ☐ HPC		<1	2					HD.849.317-5
	Well 6 Sept 5 08:27 ☐ HPC		<1	<1					HD.849.318-6
	Well 7 Sept 5 08:20 ☐ HPC		<1	<1					HD.849.319-7
	☐ HPC								
	☐ HPC								

Sampler: Golder Staff
Date: Sept 4+5/2000
Comm'ts:

Certificates of analysis are faxed only, unless otherwise requested

FOR LABORATORY USE ONLY

Client Number: 152004
Date/Time Rec: Sept. 5/00 11am
Temp. on Rec't: 10C
Rec't Condition: ok
Received By: G

Analysis Date: Sept 5/00 15:30
Report Status: ☐ PARTIAL ☑ FINAL
Analyst: [illegible]
Analyst:
Date: Sept 6/00

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MDS LABORATORY SERVICES

Environmental Work Order / Certificate of Analysis

Client: Golden & Assoc.
Contact:
Address:
Phone:
Fax:
Project: 001-3105

Sample type ☐ Treated/Distribution ☐ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☑ E.coli ☑ Total Coliform ☐ Fecal Coliform
☐ Other:

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Page 1 of 3

MDS LABORATORY SERVICES
748 Baseline Road East
London, Ont. Can. N6C 2R8
Phone: (519) 672-4500
Fax: (519) 672-0379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)		Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
1	Well6 1:00pm	☐HPC	Sept5/00	<1	<1					HD.851.389-7
2	" 15:40	☐HPC	"	<1	<1					HD.851.390-8
3	" 6:10pm	☐HPC	"	<1	3					HD.851.391-0
4	" 8:15pm	☐HPC	"	<1	5					HD.851.392-1
5	" 11:00pm	☐HPC	"	<1	5					HD.851.393-2
6	" 1:54	☐HPC	Sept6/00	<1	2					HD.851.394-3
7	" 04:55	☐HPC	"	<1	1					HD.851.395-4
8	Well7 13:20	☐HPC	Sept5/00	<1	<1					HD.851.396-5
9	" 15:50	☐HPC	"	<1	<1					HD.851.397-6
10	" 6:15pm	☐HPC	"	<1	<1					HD.851.398-7

Sampler:
Date:
Comm'ts:

Certificates of analysis are faxed only, unless otherwise requested

FOR LABORATORY USE ONLY

Client Number: 315804
Date/Time Rec: Sept 7/00 2am
Temp. on Rec't: [illegible]
Rec't Condition: [illegible]
Received By:

Analysis Date: Sept 7/00 9:45am
Report Status: ☐ PARTIAL ☑ FINAL
Analyst:
Analyst:
Date: Sept 8/00

[illegible] IS U[illegible] AS [illegible] WORK ORDER FORM / CERTIFICATE OF ANALYSIS [illegible] ALL ANALYSES PERFORMED BY STANDARD METHODS. MDS LABORATORY SERVICES LONDON IS A CAEAL ACCREDITED LABORATORY

LAB ATO JER S vir nta rk O / C ate aly

Client: Golder & Assoc.
Contact:
Address:

Phone:
Fax:
Project: 001-3105

Sample type ☐ Treated/Distribution ☐ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25% Tr. or ☑ HPC/sample
☐ E.coli ☐ Total Coliform ☐ Fecal Coliform
☐ Other:

MDS Laboratory Services is a CAEAL Accredited Laboratory

Page 2 of 3

MDS LABORATORY SERVICES
748 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-9379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
11	Well 7 8:20pm ☐ HPC	Sept5/00	<1	<1					HD.851.399-8
12	" 11:00pm ☐ HPC	"	<1	<1					HD.851.400-0
13	" 1:58 ☐ HPC	Sept6/00	<1	<1					HD.851.401-1
14	" 4:55am ☐ HPC	"	<1	<1					HD.851.402-2
15	Well6 8:00am ☐ HPC	Sept6/00	<1	<1					HD.851.403-3
16	Well 7 8:00am ☐ HPC	"	<1	<1					HD.851.404-4
17	Well6 11:00am ☐ HPC	"	<1	1					HD.851.405-5
18	Well 7 " ☐ HPC	"	<1	<1					HD.851.406-6
19	Well6 1345am ☐ HPC	"	<1	2					HD.851.407-7
20	Well 7 13:40 ☐ HPC	"	<1	<1					HD.851.408-8

Sampler:
Date:
Comm'ts:

Certificates of analysis are faxed only, unless otherwise requested

FOR LABORATORY USE ONLY

Client Number: 315804
Date/Time Rec: Sept 7/00 2am
Temp. on Rec't: OK
Rec't Condition: OK
Received By:

Analysis Date: Sept 7/00 9:45am
Report Status: ☐ PARTIAL ☑ FINAL
Analyst:
Analyst:
Date: Sept 8/00

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MDS LABORATORY SERVICES

Environmental Work Order / Certificate of Analysis

Client: Golder & Assoc.
Contact:
Address:

Phone:
Fax:
Project: 001-3105

Sample type ☐ Treated/Distribution ☐ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☐ E.coli ☐ Total Coliform ☐ Fecal Coliform
☐ Other:

MDS Laboratory Services is a CAEAL Accredited Laboratory

Page 3 of 3

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-0379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)		Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
21	Well6 16:45	☐ HPC	Sept6/00	<1	2					HD.851.409-0
22	Well7 4:55pm	☐ HPC	11	<1	<1					HD.851.410-1
		☐ HPC								
		☐ HPC								
		☐ HPC								
		☐ HPC								
		☐ HPC								
		☐ HPC								
		☐ HPC								
		☐ HPC								

Sampler:
Date:
Comm'ts:

Certificates of analysis are faxed only, unless otherwise requested

FOR LABORATORY USE ONLY

Client Number: 315804
Date/Time Rec: Sept 7/00 7am
Temp. on Rec't: OK
Rec't Condition: OK
Received By:

Analysis Date: Sept 7/00 945am
Report Status: ☐ PARTIAL ☑ FINAL
Analyst:
Analyst:
Date: Sept 8/00

AP TO ER 3 iro ital Or Ce te o analys

Client: GOLDER
Contact: DAN BROWN
Address:
Phone: 471-9600
Fax: 471-4707
Project: 001-3105

Sample type ☐ Treated/Distribution ☑ Untreated/Raw

- ☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
- ☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
- ☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
- ☑ E.coli ☑ Total Coliform ☐ Fecal Coliform
- ☐ Other:

MDS Laboratory Services is a CAEAL Accredited Laboratory

Page 1 of 2

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-8379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	Well 6, Sept 6, 7:45PM ☐ HPC	Sept 6/00	<1 ✓	<1 ✓					HD.851.512-4
	WELL #7, Sept 6, 7:45AM. ☐ HPC	Sept 6/00	<1 ✓	<1 ✓					HD.851.513-5
	00-17S ☐ HPC	Sept 7/00	<10 ✓	✓ 100					HD.851.514-6
	00-17D ☐ HPC	"	<1 ✓	✓ <1					HD.851.515-7
	00-18S ☐ HPC	"	<1 ✓	✓ <1					HD.851.516-8
	00-18D ☐ HPC	"	<10 ✓	400 ✓					HD.851.517-0
	00-19S ☐ HPC	"	<10 ✓	✓ <100					HD.851.518-1
	00-19D ☐ HPC	"	✓ <10	500 ✓					HD.851.519-2
	00-20S ☐ HPC	"	✓ <1	✓ <10					HD.851.520-3
	00-20D ☐ HPC	"	✓ <1	✓ <10					HD.851.521-4

Sampler: GOLDER STAFF
Date: Sept. 7/00
Comm'ts:

FOR LABORATORY USE ONLY

Client Number: 315804
Date/Time Rec: Sept 7/00 4:20 pm
Temp. on Rec't:
Rec't Condition:
Received By:

Analysis Date: Sept 7/00 6pm
Report Status: ☐ PARTIAL ☑ FINAL
Analyst:
Analyst:
Date: Sept 8/00

Certificates of analysis are faxed only, unless otherwise requested

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MDS LABORATORY SERVICES

Environmental Work Order / Certificate of Analysis

Client: GOLDER
Contact: DAN BROWN
Address:
Phone: 471-9600
Fax: 471-9707
Project: 001-3105

Sample type ☐ Treated/Distribution ☑ Untreated/Raw

☐ M/F E.coli, Coliforms and Background (BKG) M/F - Membrane Filtration
☐ P/A E.coli and Total Coliforms P/A - Presence/Absence
☐ Heterotrophic Plate Count (HPC) ☐ All ☐ 25%Tr. or ☑ HPC/sample
☑ E.coli ☑ Total Coliform ☐ Fecal Coliform
☐ Other:

MDS Laboratory Services is a CAEAL Accredited Laboratory

Page 2 of 2

MDS LABORATORY SERVICES
746 Baseline Road East
London, Ont. Can. N6C 2R6
Phone: (519) 672-4500
Fax: (519) 672-9379
Toll Free: 1-877-848-8060

ID NO.	Sample ID (Identification of collection site)	Collection Date / Time:	E. coli Count (cfu/100ml)	Total Coliform (cfu/100ml)	BKG Count (cfu/100ml)	HPC Count (cfu/1ml)		Chlorine Free/Total	Laboratory Sample Reference Number
	00$-21 ☐ HPC	Sept 7/00	<10 ✓	<100 ✓					HD.851.522-5
	00-22 ☐ HPC	Sept 7/00	✓ <10	<100 ✓					HD.051.523-6
	☐ HPC								
	☐ HPC								Poor detection limits on samples due
	☐ HPC								to high background counts and/or
	☐ HPC								viscous sample matrix. JWO
	☐ HPC								MDS.
	☐ HPC								
	☐ HPC								
	☐ HPC								

Sampler: GOLDER STAFF
Date: Sept 7/00
Comm'ts:

Certificates of analysis are faxed only, unless otherwise requested

FOR LABORATORY USE ONLY

Client Number: 31580
Date/Time Rec: Sept 7/00 4:20 pm
Temp on Rec't:
Rec't Condition:
Received By:

Analysis Date: Sept 7/00
Report Status: ☐ PARTIAL ☑ FINAL
Analyst:
Analyst:
Date:

[illegible] CERTIFICATE OF ANALYSIS ALL ANALYSES PERFORMED BY STANDARD METHODS. MDS LABORATORY SERVICES LONDON IS A CAEAL ACCREDITED LABORATORY.

Ontario Ministry of Health

Laboratories Branch

Bacteriological Analysis of Water
FOR OFFICIAL AGENCY USE ONL

Date received AUG. 15/00

Check all appropriate boxes

Source of Samples Walkerton GW Wells
Date Sampled Aug. 14/00 Collected by Golder
Report to Dan Brown @ Golder Assoc. Ltd.
Address 560 Nottinghill Rd.
London, ON. N6K 3P1

Drinking Water
- ☐ Treated
- ☒ Non-treated
- ☐ Municipal Supply
- ☐ Communal Supply
- ☐ Single Household
- ☐ Other

Non-drinking Water
- ☐ Recreational
- ☐ Hydrotherapy Spa Whirlpool
- ☐ Wading Pool
- ☒ Other GW Monitoring Wells
- ☐ Swimming Pool-Indoor
- ☐ Swimming Pool-Outdoor
- ☐ Sewage

Comments

Bacterial Counts Based On 100ml. Vol.

Sample No.	Identification of Collection Site	S Laboratory Number	Coliforms Total	Coliforms E. coli	Ps. aeruginosa	S. aureus	O157-H7	APC Based on 1ml. Vol.
	TW-1	S-00461	✓	✓			✓	
	TW-2	S-00462	✓	✓			✓	
	82-1	S-00463	✓	✓			✓	
	82-2	S-00464	✓	✓			✓	
		S-00461	0	0			ND	
		S-00462	>800	0			ND	
		S-00463	>800	0			ND	
		S-00464	20	0			ND	
		ND = NOT DETECTED						

LDER ASSOCIATES
AUG 24 2000
EIVED — LONDON

Frances [illegible]

Sampling Precautions:
- Only surveys authorized by the local Medical Officer of Health or by the Public Health Laboratory will be processed.
- Arrange sampling programs and schedules beforehand with receiving laboratory.
- Transport all non-drinking samples to laboratory within 6 hours after collection or within 24 hours if kept refrigerated (not frozen).
- Transport drinking water samples to laboratory within 48 hours after collection under refrigeration if possible.
- Use a separate submission form for each type of water sample submitted for analysis.

For Laboratory Use

FRANCES [illegible] M.D. F.R.C.P.C.
[illegible]
[illegible] DEPT.
CLINICAL [illegible] ATORY
CENTRAL [illegible]

FOR INQUIRIES RE[illegible]DING THE
SIGNIFICANCE OF THIS RESULT,
PLEASE CALL BRUCE CIEBIN
AT: (416) 235-5707

Examined by	Checked by	Date Reported

09/05/00 07:58 ☎416 235 5951 LAB SERVICES BR. 002/002

Ministry of Health
Ontario

Laboratories Branch

Date received: Aug. 28/00

Bacteriological Analysis of Water
FOR OFFICIAL AGENCY USE ONLY

Check all appropriate boxes

Source of Samples: Walkerton Groundwater
Date Sampled: August 26/00 Collected by: B.V. of Golder Assoc.
Report to: Dan Brown
Address: 500 Nottinghill Rd.
London, ON N6K 3P1
Fax: (519) 471-4707

Drinking Water
☐ Treated
☐ Non-treated
☐ Municipal Supply
☐ Communal Supply
☐ Single Household
☐ Other

Non-drinking Water
☐ Recreational
☐ Hydrotherapy Spa Whirlpool
☐ Wading Pool
☒ Other Non-Treated Groundwater
☐ Swimming Pool-Indoor
☐ Swimming Pool-Outdoor
☐ Sewage

Comments:

Bacterial Counts Based On 100ml. Vol.

Sample No.	Identification of Collection Site	S Laboratory Number	Coliforms Total	Coliforms E. coli	Ps. aeruginosa	S. aureus	O157 H7	APC Based on 1ml. Vol.
	MW00-1S	S-00477	1.5×10^3 ✓	<10 ✓			ND ✓	
	MW00-1D	S-00478	✓	✓			✓	
	MW00-2S	S-00479	92 ✓	<10 ✓			ND. ✓	
	MW00-2D	S-00480	✓	✓			✓	
	MW00-3S	S-00481	✓	✓			✓	
	MW00-3D	S-00482	✓	✓			✓	
	MW00-5	S-00483	4.6×10^4 ✓	<10 ✓			ND ✓	
	MW00-6S	S-00484	930 ✓	<10 ✓			ND. ✓	
	MW00-6D	S-00485	✓	✓			✓	
	MW00-7S	S-00486	2.4×10^3	<10 ✓			ND ✓	
	MW00-7D	S-00487	9.3×10^3 ✓	<10 ✓			ND. ✓	
	MW00-8S	S-00488	2.4×10^4 ✓	<10 ✓			ND. ✓	
	MW00-8D	S-00489	✓	✓			✓	

Frances J.

Sampling Precautions: ND = NOT DETECTED.

- Only surveys authorized by the local Medical Officer of Health or by the Public Health Laboratory will be processed.
- Arrange sampling programs and schedules beforehand with receiving laboratory.
- Transport all non-drinking samples to laboratory within 6 hours after collection or within 24 hours if kept refrigerated (not frozen).
- Transport drinking water samples to laboratory within 48 hours after collection under refrigeration if possible.
- Use a separate submission form for each type of water sample submitted for analysis.

For Laboratory Use

NOT ALL SAMPLES LISTED WERE REC'D. - P.D.

FRANCES JAMIESON, M.D., F.R.C.P.C.
[illegible] DEPT
CLINICAL [illegible]
[illegible]
FOR [illegible] REGARDING THE
[illegible] RESULT,
SIGNIFICANCE [illegible] CIEBIN
PLEASE CALL [illegible]
AT (416) 235-5707

Examined by	Checked by	Date Reported
PB.		SEPT. 5/00

20-44 (89/07)

Ontario Ministry of Health
Laboratories Branch

Bacteriological Analysis of Water
FOR OFFICIAL AGENCY USE ONLY

Check all appropriate boxes

Date received AUG.29/00

Source of Samples Walkerton (Groundwater)
Date Sampled Aug 28/00 Collected by R\d Golder
Report to Dan Brown - Golder Assoc. Ltd.
Address 500 Nottinghill Rd.
London, ONT N6K 3P1
FAX: (519) 471-4707

Drinking Water
☐ Treated
☐ Non-treated
☐ Municipal Supply
☐ Communal Supply
☐ Single Household
☐ Other

Non-drinking Water
☐ Recreational
☐ Hydrotherapy Spa Whirlpool
☐ Wading Pool
☒ Other Groundwater Samples
☐ Swimming Pool-Indoor
☐ Swimming Pool-Outdoor
☐ Sewage

Comments:

Bacterial Counts Based On 100ml. Vol.

Sample No.	Identification of Collection Site	Laboratory Number S	Coliforms Total	Coliforms E. coli	Ps. aeruginosa	S. aureus	0157 H7	APC Based on 1ml. Vol.
	001-3105 MW00-9D	S-00490	43 ✓	<3 ✓			ND ✓	
	001-3105 MW00-10S	S-00491	1.1×10^3 ✓	<3 ✓			ND ✓	
	001-3105 MW00-10D	S-00492	<3 ✓	<3 ✓			ND ✓	

ND = NOT DETECTED.

Sampling Precautions:

- Only surveys authorized by the local Medical Officer of Health or by the Public Health Laboratory will be processed.
- Arrange sampling programs and schedules beforehand with receiving laboratory.
- Transport all non-drinking samples to laboratory within 8 hours after collection or within 24 hours if kept refrigerated (not frozen).
- Transport drinking water samples to laboratory within 48 hours after collection under refrigeration if possible.
- Use a separate submission form for each type of water sample submitted for analysis.

For Laboratory Use

Frances Jamieson

FRANCES JAMIESON, M.D., F.R.C.P.C.
MEDICAL MICROBIOLOGIST
CLINICAL & ENVIRONMENTAL MICROBIOLOGY DEPT.
CENTRAL PUBLIC HEALTH LABORATORY

FOR INQUIRIES REGARDING THE SIGNIFICANCE OF THIS RESULT, PLEASE CALL BRUCE CIEBIN AT. (416) 235-5707

Examined by PB.
Checked by
Date Reported SEPT.6/00

96-44 (96/07)

Ontario
Ministry of Health
Laboratories Branch

Bacteriological Analysis of Water
FOR OFFICIAL AGENCY USE ONLY

Date received: AUG. 30/00

Check all appropriate boxes

Source of Samples: Walkerton Groundwater
Date Sampled: Aug 29/00 Collected by: Golder
Report to: Dana Brown
Address: 500 Nottinghill Rd.
London, ON N6K 3P1
Fax – (519) 471-4707.

Drinking Water
☐ Treated
☐ Non-treated
☐ Municipal Supply
☐ Communal Supply
☐ Single Household
☐ Other

Non-drinking Water
☐ Recreational
☐ Hydrotherapy Spa Whirlpool
☐ Wading Pool
☒ Other Groundwater
☐ Swimming Pool-Indoor
☐ Swimming Pool-Outdoor
☐ Sewage

Comments:

Bacterial Counts Based On 100ml. Vol.

Sample No.	Identification of Collection Site 001-3105	Laboratory Number S	Coliforms Total	Coliforms E. coli	Ps. aeruginosa	S. aureus	O157 H7	APC Based on 1ml. Vol.
	MW00-3S	S-00493	30 ✓	<10 ✓			ND ✓	
	MW00-4S	S-00494	2.4×10^4 ✓	<10 ✓			ND ✓	
	MW00-4D	S-00495	300 ✓	<10 ✓			ND ✓	
	MW00-9S	S-00496	500 ✓	<10 ✓			ND ✓	
	MW00-10S	S-00497	2.4×10^4 ✓	<10 ✓			ND ✓	
	MW00-11D	S-00498	2.5×10^3 ✓	<10 ✓			ND ✓	
	MW00-12D	S-00499	$>8.0\times10^3$ ✓	$>8.0\times10^3$ ✓			ND ✓	
	MW00-13S	S-00500	9.3×10^3 ✓	<10 ✓			ND ✓	
	MW00-17D	S-00501	2.5×10^3 ✓	<10 ✓			ND ✓	
	MW00-18S	S-00502	4.6×10^4 ✓	<10 ✓			ND ✓	
	MW00-18D	S-00503	$>8.0\times10^3$ ✓	<10 ✓			ND ✓	
	MW00-19S	S-00504	<10 ✓	<10 ✓			ND ✓	

Sampling Precautions: ND = NOT DETECTED.

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- Arrange sampling programs and schedules beforehand with receiving laboratory.
- Transport all non-drinking samples to laboratory within 6 hours after collection or within 24 hours if kept refrigerated (not frozen).
- Transport drinking water samples to laboratory within 48 hours after collection under refrigeration if possible.
- Use a separate submission form for each type of water sample submitted for analysis.

For Laboratory Use

Frances Jamieson
FRANCES JAMIESON, M.D., F.R.C.P.C.
MEDICAL MICROBIOLOGIST
CLINICAL & ENVIRONMENTAL MICROBIOLOGY DEPT.
CENTRAL PUBLIC HEALTH LABORATORY

FOR INQUIRIES REGARDING THE SIGNIFICANCE OF THIS RESULT, PLEASE CALL BRUCE CIEBIN AT: (416) 235-5707

Examined by	Checked by	Date Reported
PB.		SEPT. 8/00

33-44 (95/07)

Ministry of Health
Ontario
Laboratories Branch

Date received AUG. 30/00

Bacteriological Analysis of Water
FOR OFFICIAL AGENCY USE ONLY

Check all appropriate boxes

Source of Samples Walkerton GW
Date Sampled Aug 29/00 Collected by Golder
Report to Dan Brown
Address 500 Notting hill Rd.
London, ON N6K 3P1
FAX (519) 471-4707

Drinking Water
☐ Treated
☐ Non-treated
☐ Municipal Supply
☐ Communal Supply
☐ Single Household
☐ Other

Non-drinking Water
☐ Recreational
☐ Hydrotherapy Spa Whirlpool
☐ Wading Pool
☒ Other Groundwater
☐ Swimming Pool-Indoor
☐ Swimming Pool-Outdoor
☐ Sewage

Comments:

Bacterial Counts Based On 100mL Vol.

Sample No.	Identification of Collection Site	Laboratory Number	Coliforms		Ps. aeruginosa	S. aureus	O157 H7	APC Based on 1ml. Vol.
			Total	E. coli				
	001-3105	S						
	MW00-19D	S-00505	1.7×10^3 ✓	<10 ✓			ND ✓	
	MW00-20S	S-00506	800 ✓	<10 ✓			ND ✓	
	MW00-20D	S-00507	350 ✓	0 ✓			ND ✓	
	MW00-22	S-00508	2.4×10^3 ✓	<19			ND. ✓	
	ND= NOT DETECTED.							

Sampling Precautions:

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- Arrange sampling programs and schedules beforehand with receiving laboratory.
- Transport all non-drinking samples to laboratory within 6 hours after collection or within 24 hours if kept refrigerated (not frozen).
- Transport drinking water samples to laboratory within 48 hours after collection under refrigeration if possible.
- Use a separate submission form for each type of water sample submitted for analysis.

For Laboratory Use

Frances Jamieson
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MEDICAL MICROBIOLOGIST
CLINICAL & ENVIRONMENTAL MICROBIOLOGY DEPT
CENTRAL PUBLIC HEALTH LABORATORY

FOR INQUIRIES REGARDING THE SIGNIFICANCE OF THIS RESULT. PLEASE CALL BRUCE CIEBIN AT: (416) 235-5707

Examined by	Checked by	Date Reported
RB.		SEPT. 9/00

S6-44 (96/07)

Ontario Ministry of Health
Laboratories Branch

Date received: SEPT. 2, 2000

Bacteriological Analysis of Water
FOR OFFICIAL AGENCY USE ONLY

Check all appropriate boxes

Source of Samples Walkerton (Groundwater)
Date Sampled Sept 1/00 Collected by Golder
Report to Dan Brown @ Golder Assoc. Ltd.
Address 500 Nottinghill Road
London, ON N6K 3P1
FAX (519) 471-4707

Drinking Water
☐ Treated
☐ Non-treated
☐ Municipal Supply
☐ Communal Supply
☐ Single Household
☐ Other

Non-drinking Water
☐ Recreational
☐ Hydrotherapy Spa Whirlpool
☐ Wading Pool
☒ Other Groundwater
☐ Swimming Pool-Indoor
☐ Swimming Pool-Outdoor
☐ Sewage

Comments:

Bacterial Counts Based On 100ml. Vol.

Sample No.	Identification of Collection Site	Laboratory Number	Coliforms		Ps. aeruginosa	S. aureus	0157 H7	APC Based on 1ml. Vol.
			Total	E. coli				
	MW00-7D	5521	500 ✓	<10 ✓			ND ✓	
	MW00-8S	5522	5.0×10^3 ✓	<10 ✓			ND ✓	
	MW00-8D	5523	1.1×10^4 ✓	<10 ✓			ND ✓	
	MW00-9S	5524	3.0×10^3 ✓	20 ✓			ND ✓	
	MW00-9D	5525	1.2×10^4 ✓	<10 ✓			ND ✓	
	MW00-10S	5526	1.3×10^4 ✓	<10 ✓			ND ✓	
	MW00-10D	5527	<10 ✓	<10 ✓			ND ✓	
	MW00-11S	5528	900 ✓	<10 ✓			ND ✓	
	MW00-11D	5529	4.1×10^4 ✓	<10 ✓			ND ✓	
	MW00-12D	5530	3.6×10^4 ✓	1.2×10^4 ✓			ND ✓	
	Well 5 08:45	5531	60 ✓	20 ✓			ND ✓	
			✓	✓				

Sampling Precautions:

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- Arrange sampling programs and schedules beforehand with receiving laboratory.
- Transport all non-drinking samples to laboratory within 6 hours after collection or within 24 hours if kept refrigerated (not frozen).

For Laboratory Use Frances Jamieson

FAXED 10/09/00 FJ

FRANCES JAMIESON, M.D., F.R.C.P.C.
MEDICAL MICROBIOLOGIST
CLINICAL & ENVIRONMENTAL MICROBIOLOGY DEPT
CENTRAL PUBLIC HEALTH LABORATORY

FOR INQUIRIES REGARDING THE
SIGNIFICANCE OF THIS RESULT,

Sample No.	Identification of Collection Site 001-3105	Laboratory Number	Coliforms Total	Coliforms E. coli	Ps. aeruginosa	S. aureus	H7	1ml. Vol.
	MW00 - 1S	S509	2.4×10^3 ✓	<10 ✓			ND ✓	
	MW00 - 1D	S510	500 ✓	<10 ✓			ND ✓	
	MW00 - 2S	S511	430 ✓	110 ✓			ND ✓	
	MW00 - 2D	S512	1.8×10^3 ✓	900 ✓			ND ✓	
	MW00 - 3S	S513	500 ✓	<10 ✓			ND ✓	
	MW00 - 3D	S514	600 ✓	<10 ✓			ND ✓	
	MW00 - 4S	S515	1.0×10^3 ✓	10 ✓			ND ✓	
	MW00 - 4D	S516	4.0×10^3 ✓	<10 ✓			ND ✓	
	MW00 - 5	S517	1.2×10^4 ✓	<10 ✓			ND ✓	
	MW00 - 6S	S518	1.5×10^3 ✓	<10 ✓			ND ✓	
	MW00 - 6D	S519	9.0×10^3 ✓	<10 ✓			ND ✓	
	MW00 - 7S	S520	1.2×10^3 ✓	<10 ✓			ND ✓	

Sampling Precautions:

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- Transport drinking water samples to laboratory within 48 hours after collection under refrigeration if possible.
- Use a separate submission form for each type of water sample submitted for analysis.

For Laboratory Use

Frances Jameson

FRANCES JAMIESON, M.D., F.R.C.P.C.
MEDICAL MICROBIOLOGIST
CLINICAL & ENVIRONMENTAL MICROBIOLOGY DEPT.
CENTRAL PUBLIC HEALTH LABORATORY

FAXED
10/09/00 PB

FOR INQUIRIES REGARDING THE
SIGNIFICANCE OF THIS RESULT,
PLEASE CALL BRUCE CIEBIN
AT: (416) 235-5707

Examined by	Checked by	Date Reported
PB.		SEPT. 10/00

95-44 (95/07)

Ontario Ministry of Health
Laboratories Branch

Date received: SEPT. 8/00

Bacteriological Analysis of Water
FOR OFFICIAL AGENCY USE ONLY

Check all appropriate boxes

Source of Samples: Walkerton
Date Sampled: Sept 7/00 Collected by: Golder
Report to: D. Brown @ Golder Associates
Address: 500, Wharnhill Road
London Ontario
N6K 3P1

Drinking Water
☐ Treated
☒ Non-treated
☐ Municipal Supply
☐ Communal Supply
☐ Single Household
☐ Other

Non-drinking Water
☐ Recreational
☐ Hydrotherapy Spa Whirlpool
☐ Wading Pool
☐ Other
☐ Swimming Pool-Indoor
☐ Swimming Pool-Outdoor
☐ Sewage

Comments:

Bacterial Counts Based On 100ml. Vol.

Sample No.	Identification of Collection Site	S Laboratory Number	Coliforms Total	Coliforms E. coli	Ps. aeruginosa	S. aureus	O157 H7	APC Based on 1ml. Vol.
	Well #6 Sept 6 7:45pm	S- 532	✓1	✓0			✓ND	
	Well #7 Sept 6 7:45pm	S-533	✓0	✓0			✓ND	
✓	MW 00-17S	S-534	9.0×10^3 ✓	✓<10			✓ND	
✓	MW 00-17D	S-535	✓10	✓<10			✓ND	
✓	MW 00-18S	S-536	110 ✓	<10 ✓			✓ND	
✓	MW 00-18D	S-537	3.0×10^4 ✓	✓<10			✓ND	
✓	MW 00-19S	S-538	500 ✓	<10 ✓			✓ND	
✓	MW 00-19D	S-539	400 ✓	✓<10			✓ND	
✓	MW 00-20S	S-540	1.7×10^3 ✓	✓<10			✓ND	
✓	MW 00-20D	S-541	4.4×10^3 ✓	✓<10			✓ND	
✓	MW 00-22	S-542	5.0×10^3 ✓	✓<10			✓ND.	

Frances Jamieson

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- Transport drinking water samples to laboratory within 48 hours after collection under refrigeration if possible.
- Use a separate submission form for each type of water sample submitted for analysis.

For Laboratory Use

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MEDICAL MICROBIOLOGIST
CLINICAL & ENVIRONMENTAL MICROBIOLOGY DEPT
CENTRAL PUBLIC HEALTH LABORATORY

FOR INQUIRIES REGARDING THE
SIGNIFICANCE OF THIS RESULT,
PLEASE CALL BRUCE CIEBIN
AT: (416) 235-5707

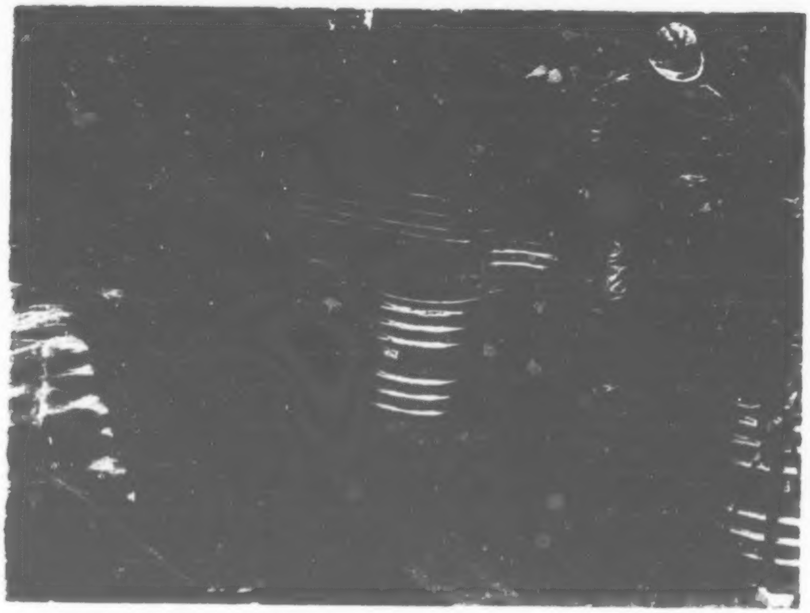
Examined by	Checked by	Date Reported
PB		SEPT. 13/00

[illegible] (96/07)

APPENDIX G

PHOTOGRAPHS

Decontamination Centre



Photograph 1: Drilling decontamination centre, with wash station on right, chlorination and rinse stations in centre

Photograph 2: Decontamination centre initial power wash station, with Alconox wash station to the left

Decontamination Centre

Photograph 3: Decontamination centre final rinse station

Drilling and Monitoring Wells

Photograph 4: Surface casings installed at MW-3 (foreground), MW-4 (right) and drilling at location MW-6

Boreholes and Monitoring Wells

Photograph 5 Surface water ponded around MW-4S from precipitation after installation of casing.

Photograph 6: Surface casing installations at location MW-2

APPENDIX H

WATER WELL RECORDS

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

WELL #5.

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT Bruce	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE Brant	CON., BLOCK, TRACT, SURVEY, ETC. Con. 2 S.D.R.	LOT Pt. 20
OWNER (SURNAME FIRST) WALKERTON P. U. C.	ADDRESS 123 Scott Street, Walkerton Ontario		DATE COMPLETED DAY 30 MO June YR 78

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Clay	Stones	Sandy, mixed	0	6
	Sand	Gravel	Mixed	6	8
Brown	Limestone	Shale	Broken, soft	8	13
Brown	Limestone		Medium hard	13	16
Brown	Limestone		Broken, soft	16	19
Brown	Limestone		Medium hard	19	23
Brown	Limestone		Very fractured, soft	23	24
Grey	Limestone		Medium hard	24	43
Lt. Brown	Limestone		Medium hard	43	50

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
18 - 19	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
23 - 24	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL

CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
13 3/8 O.D.	☒ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE	.330	0	16-6
12 ½	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☒ OPEN HOLE		16-6	50
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

PUMPING TEST

PUMPING TEST METHOD ☒ PUMP ☐ BAILER	PUMPING RATE 405 I GPM	DURATION OF PUMPING 72 HOURS MINS
STATIC LEVEL 2-8½"	WATER LEVEL END OF PUMPING	WATER LEVELS DURING ☒ PUMPING ☐ RECOVERY 15 MINUTES / 30 MINUTES / 45 MINUTES / 60 MINUTES Please refer to hydrology report FEET
IF FLOWING GIVE RATE GPM	PUMP INTAKE SET AT 17-7 FEET	WATER AT END OF TEST ☒ CLEAR ☐ CLOUDY
RECOMMENDED PUMP TYPE ☐ SHALLOW ☐ DEEP	RECOMMENDED PUMP SETTING FEET	RECOMMENDED PUMPING RATE GPM

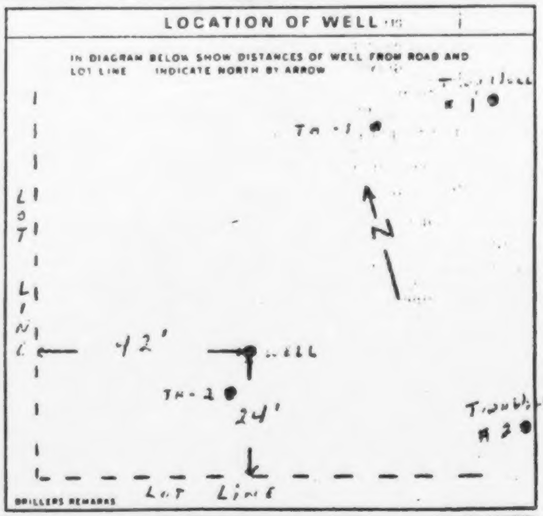
FINAL STATUS OF WELL
- ☐ WATER SUPPLY
- ☒ OBSERVATION WELL
- ☐ TEST HOLE
- ☐ RECHARGE WELL
- ☐ ABANDONED, INSUFFICIENT SUPPLY
- ☐ ABANDONED, POOR QUALITY
- ☐ UNFINISHED

WATER USE
- ☐ DOMESTIC
- ☐ STOCK
- ☐ IRRIGATION
- ☐ INDUSTRIAL
- ☐ OTHER
- ☐ COMMERCIAL
- ☐ MUNICIPAL
- ☒ PUBLIC SUPPLY
- ☐ COOLING OR AIR CONDITIONING
- ☐ NOT USED

METHOD OF DRILLING
- ☐ CABLE TOOL
- ☐ ROTARY (CONVENTIONAL)
- ☒ ROTARY (REVERSE)
- ☐ ROTARY (AIR)
- ☒ AIR PERCUSSION
- ☐ BORING
- ☐ DIAMOND
- ☐ JETTING
- ☐ DRIVING

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW



DRILLERS REMARKS

CONTRACTOR

NAME OF WELL CONTRACTOR: Davidson Well Drilling Limited
LICENCE NUMBER: 1737
ADDRESS: P.O. Box 486, Wingham, Ontario
NAME OF DRILLER OR BORER: D. C. Beavis
LICENCE NUMBER:
SIGNATURE OF CONTRACTOR: D. T. Davidson
SUBMISSION DATE: DAY 4 MO July YR 78

OFFICE USE ONLY

OWNER'S COPY

FORM NO. 0506-4-77

Ministry of the Environment

Ontario

The Ontario Water Resources Act

WATER WELL RECORD

TW #1

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

NTY OR DISTRICT Bruce	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE Brant Twp.	CON. BLOCK, TRACT, SURVEY, ETC. Con. 2 S.D.R	LOT PT 20
OWNER (SURNAME FIRST) Walkerton P.U.C	ADDRESS 123 Scott St., Walkerton, Ont.		DATE COMPLETED DAY 7 MO Mar YR 78

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

ERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH FEET FROM	DEPTH FEET TO
	Sand Fill			0	1
	Sand	Gravel, clay		1	11
Brown	Limestone		Soft, broken	11	19
Bn.-Grey	Limestone		Hard	19	37
Brown	Limestone		Soft	37	39
Brown	Limestone		Hard	39	51

WATER RECORD

ATER FOUND AT - FEET	KIND OF WATER
17-20	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL

CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH FEET FROM	DEPTH FEET TO
6	☒ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE	.188	0	12-6
6	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☒ OPEN HOLE		12-6	51
	☐			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)

DIAMETER INCHES

LENGTH FEET

MATERIAL AND TYPE

DEPTH TO TOP OF SCREEN FEET

PLUGGING & SEALING RECORD

DEPTH SET AT FEET FROM	DEPTH SET AT FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

PUMPING TEST

PUMPING TEST METHOD ☒ air PUMP ☐ BAILER

PUMPING RATE

STATIC LEVEL

WATER LEVEL END OF PUMPING

FEET

IF FLOWING GIVE RATE

RECOMMENDED PUMP ☐ SHALLOW

ME OF DRILLING

CONTRACTOR

NAME OF WELL CONTR. Davidson We

ADDRESS P.O. Box 486, Wl.

NAME OF DRILLER OR BORER D. Casemore

SIGNATURE OF CONTRACTOR

CONTRACTOR'S COPY

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

TW #2

TW #2

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT Bruce	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE Brant Twp.	CON., BLOCK, TRACT, SURVEY, ETC. Con. 2 S.D.R.	LOT Pt. 20
OWNER (SURNAME FIRST) Walkerton P.U.C.	ADDRESS 123 Scott St., Walkerton, Ont.	DATE COMPLETED DAY 7 MO Mar. YR 78	

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET	
				FROM	TO
	Topsoil			0	1
Brown	Clay	Gravel	Mixed	1	8
Brown	Limestone		Soft, broken	8	13
Dk.brown	Limestone		Hard porous	13	19
Bn.-Grey	Limestone		Hard	19	27
Lt.Brown	Limestone		Hard	27	51

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
16-19	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL

CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET	
			FROM	TO
6	☒ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE	.188	0	13-6
6	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☒ OPEN HOLE		13-6	51

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

PLUGGING & SEALING RECORD

DEPTH SET AT - FEET		MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
FROM	TO	

PUMPING TEST

PUMPING TEST METHOD ☒ PUMP ☐ BAILER		PUMPING RATE -
STATIC LEVEL 1.50 FEET	WATER LEVEL END OF PUMPING 4.18	
IF FLOWING GIVE RATE		
RECOMMENDED PUMP ☐ SHALLOW		

METHOD OF DRILLING

CONTRACTOR

NAME OF WELL CONTRACTOR Davidson
ADDRESS P.O. Box 46
NAME OF DRILLER OR BORER D. Casemore
SIGNATURE OF CONTRACTOR B. Davidson

CONTRACTOR'S COPY

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

TW 1-82

1 PRINT ONLY IN SPACES PROVIDED
2 CHECK ☒ CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT Bruce	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE Brant	CON. BLOCK, TRACT, SURVEY, ETC. Conc. 1 N.D.R.	LOT 7 & 8
OWNER (SURNAME FIRST) Walkerton P.U.C.	ADDRESS 201 Durham St., W., Walkerton, Ontario		DATE COMPLETED DAY 5 MO. Mar. YR. 82

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
	Fill	Topsoil		0	6
Brown	Sandy clay	Stones		6	13
Brown	Limestone	Red shale	Soft, broken	13	18
Brown	Limestone	White shale streaks	Medium	18	101
Grey	Limestone	Shale layers	Soft	101	112
Lt. brown	Limestone		Med. hard	112	121
Brown	Limestone		Hard	121	166
Brown	Limestone		Soft	166	168
Brown	Limestone		Med. Hard	168	197
Dk. brown	Limestone		Med. Soft	197	209
Brown	Limestone		Soft	209	234
Grey	Limestone	Shale layers	Soft	234	245

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
53 71	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
93 108	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
112 167	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
191 221	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL

CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
6	☒ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE	,188	0	22-2
6	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☒ OPEN HOLE		22-2	245
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

PUMPING TEST

PUMPING TEST METHOD ☒ PUMP ☐ BAILER		PUMPING RATE 100 Imp GPM		DURATION OF PUMPING 1 HOURS 0 MINS.	
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING ☒ PUMPING ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
+ .75 FEET	7.20 FEET	6.68 FEET	6.66 FEET	7.27 FEET	7.29 FEET
IF FLOWING GIVE RATE GPM		PUMP INTAKE SET AT 80 FEET		WATER AT END OF TEST ☒ CLEAR ☐ CLOUDY	
RECOMMENDED PUMP TYPE ☐ SHALLOW ☐ DEEP		RECOMMENDED PUMP SETTING FEET		RECOMMENDED PUMPING RATE GPM	

FINAL STATUS OF WELL

☐ WATER SUPPLY
☒ OBSERVATION WELL
☐ TEST HOLE
☐ RECHARGE WELL
☐ ABANDONED, INSUFFICIENT SUPPLY
☐ ABANDONED, POOR QUALITY
☐ UNFINISHED

WATER USE

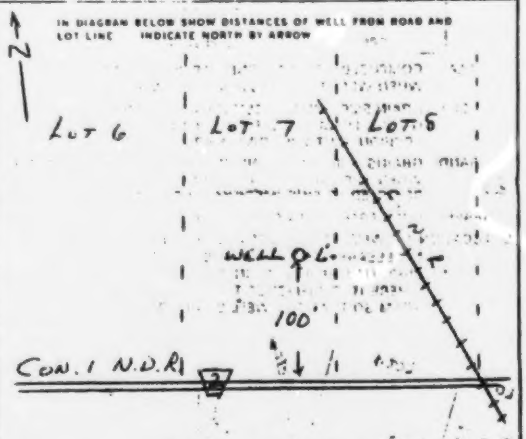
☐ DOMESTIC
☐ STOCK
☐ IRRIGATION
☐ INDUSTRIAL
☐ OTHER
☐ COMMERCIAL
☐ MUNICIPAL
☐ PUBLIC SUPPLY
☐ COOLING OR AIR CONDITIONING
☒ NOT USED

METHOD OF DRILLING

☐ CABLE TOOL
☒ ROTARY (CONVENTIONAL)
☐ ROTARY (REVERSE)
☒ ROTARY (AIR)
☐ AIR PERCUSSION
☐ BORING
☐ DIAMOND
☐ JETTING
☐ DRIVING

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS Observation Well # 1

CONTRACTOR

NAME OF WELL CONTRACTOR Davidson Well Drilling Limited	LICENCE NUMBER 1737
ADDRESS P.O. Box 486, Wingham, Ontario N0G 2H0	
NAME OF DRILLER OR BORER G. Reavie	LICENCE NUMBER
SIGNATURE OF CONTRACTOR	SUBMISSION DATE DAY 23 MO. Mar. YR. 82

OFFICE USE ONLY

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

1 PRINT ONLY IN SPACES PROVIDED
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TW 2-82

COUNTY OR DISTRICT Bruce	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE Brant	CON., BLOCK, TRACT, SURVEY, ETC. Con. 1 N.D.R.	LOT 7 & 8
OWNER (SURNAME FIRST) WALKERTON P.U.C.	ADDRESS 201 Durham St. w., Walkerton, Ontario	DATE COMPLETED DAY 16 MO. Mar. YR. 82	

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	Fill			0	3
	Topsoil			3	6
Brown	Sandy clay	Gravel	Soft	6	18
Lt. Brown	Limestone	Shale	Soft	18	25
Brown	Limestone	White shale streaks	Medium hard	25	114
Lt. Brown	Limestone		Med. soft	114	176
Brown	Limestone		Med. hard	176	181
Lt. Brown	Limestone		Med. hard	181	193
Brown	Limestone		Med. hard	193	218
Grey	Limestone	Shale streaks	Soft	218	222
Brown	Limestone		Med. soft	222	241
Grey	Limestone	Shale	Soft	241	245

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
29 48	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
73 92	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
101 118	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
171	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
189 206 221	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL

CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6	☒ STEEL	.188	0	27-2
6	☒ OPEN HOLE		27-2	245

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

PUMPING TEST

PUMPING TEST METHOD ☒ PUMP ☐ BAILER		PUMPING RATE 175 Imp GPM	DURATION OF PUMPING 24 HOURS MINS		
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING ☒ PUMPING ☐ RECOVERY 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
+ 0.02 FEET	27.93 FEET	25.73 FEET	26.20 FEET	26.57 FEET	26.80 FEET
IF FLOWING GIVE RATE GPM		PUMP INTAKE SET AT 80 FEET	WATER AT END OF TEST ☒ CLEAR ☐ CLOUDY		
RECOMMENDED PUMP TYPE ☐ SHALLOW ☐ DEEP		RECOMMENDED PUMP SETTING FEET	RECOMMENDED PUMPING RATE GPM		

FINAL STATUS OF WELL

- ☐ WATER SUPPLY
- ☒ OBSERVATION WELL
- ☐ TEST HOLE
- ☐ RECHARGE WELL
- ☐ ABANDONED, INSUFFICIENT SUPPLY
- ☐ ABANDONED, POOR QUALITY
- ☐ UNFINISHED

WATER USE

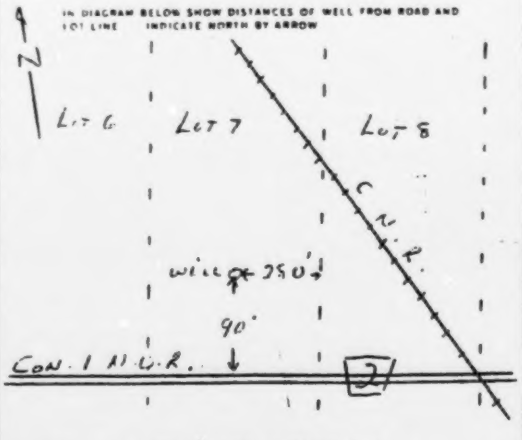
- ☐ DOMESTIC
- ☐ STOCK
- ☐ IRRIGATION
- ☐ INDUSTRIAL
- ☐ OTHER
- ☐ COMMERCIAL
- ☐ MUNICIPAL
- ☐ PUBLIC SUPPLY
- ☐ COOLING OR AIR CONDITIONING
- ☒ NOT USED

METHOD OF DRILLING

- ☐ CABLE TOOL
- ☒ ROTARY (CONVENTIONAL)
- ☐ ROTARY (REVERSE)
- ☒ ROTARY (AIR)
- ☐ AIR PERCUSSION
- ☐ BORING
- ☐ DIAMOND
- ☐ JETTING
- ☐ DRIVING

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW



DRILLERS REMARKS Observation Well # 2

CONTRACTOR

NAME OF WELL CONTRACTOR: Davidson Well Drilling Limited
LICENCE NUMBER: 1737
ADDRESS: P.O. Box 486, Wingham, Ontario NOG 2WO
NAME OF DRILLER OR BORER: G. Reavie
LICENCE NUMBER:
SIGNATURE OF CONTRACTOR: Douglas F. Davidson
SUBMISSION DATE: DAY 23 MO. Mar. YR. 82

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OWNER'S COPY

FORM NO. 0506-4-77 FORM 7

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

T11) 1-86

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

COUNTY OR DISTRICT Bruce	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE Brant Twp.	CON., BLOCK, TRACT, SURVEY, ETC. Con. N.D.R. 1	LOT Pt. 6
OWNER (SURNAME FIRST) WALKERTON P.U.C.	ADDRESS 4 Park St. Walkerton, Ont. NOG 2VO		DATE COMPLETED DAY 19 MO Nov. YR 86.

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
	Fill			0	2
Brown	Sandy clay	Grit		2	14
Brown	Sandy clay	Stones	Hard	14	19
	Limestone	Shale streaks	Medium soft	19	29
Grey	Limestone		Medium hard	29	56
Brown	Limestone		Medium soft w/hard layers	56	94
Brown	Limestone		Medium soft	94	119
Lt.Brown	Limestone		Medium hard	119	158
Brown	Limestone		Medium hard	158	168
Brown	Broken Limestone		Soft, loose	168	170
Brown	Limestone		Soft	170	172
Lt.Brown	Broken Limestone		Soft, loose	172	175
Lt.Brown	Limestone		Soft	175	216
Lt.Brown	Broken Limestone		Soft	216	217
Lt.Brown	Limestone		Medium hard	217	227
Lt.Brown	Limestone		Soft	227	231
Brown	Limestone		Hard	231	243
Lt.Brown	Broken limestone		Soft	243	245

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER	
57 91	☒ FRESH ☐ SALTY	☐ SULPHUR ☐ MINERAL
102 133	☒ FRESH ☐ SALTY	☐ SULPHUR ☐ MINERAL
168 172	☒ FRESH ☐ SALTY	☐ SULPHUR ☐ MINERAL
216 227	☒ FRESH ☐ SALTY	☐ SULPHUR ☐ MINERAL
243	☒ FRESH ☐ SALTY	☐ SULPHUR ☐ MINERAL

CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
6	☒ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE	.188	0	45-0
6	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☒ OPEN HOLE		45-0	245
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

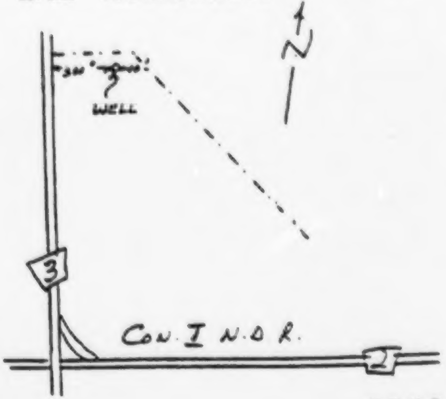
PUMPING TEST

PUMPING TEST METHOD ☒ PUMP ☐ BAILER		PUMPING RATE 359 Imp. GPM		DURATION OF PUMPING 24 HOURS ___ MINS	
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING ☒ PUMPING ☐ RECOVERY			
Flowing FEET	24.25' FEET	15 MINUTES 16.6' FEET	30 MINUTES 17.4' FEET	45 MINUTES 18.0' FEET	60 MINUTES 18.5' FEET
IF FLOWING GIVE RATE 225 GPM		PUMP INTAKE SET AT 44 FEET		WATER AT END OF TEST ☒ CLEAR ☐ CLOUDY	
RECOMMENDED PUMP TYPE ☐ SHALLOW ☐ DEEP		RECOMMENDED PUMP SETTING FEET		RECOMMENDED PUMPING RATE GPM	

FINAL STATUS OF WELL	☐ WATER SUPPLY ☐ OBSERVATION WELL ☒ TEST HOLE ☐ RECHARGE WELL	☐ ABANDONED, INSUFFICIENT SUPPLY ☐ ABANDONED, POOR QUALITY ☐ UNFINISHED
WATER USE	☐ DOMESTIC ☐ STOCK ☐ IRRIGATION ☐ INDUSTRIAL ☐ OTHER	☐ COMMERCIAL ☐ MUNICIPAL ☐ PUBLIC SUPPLY ☐ COOLING OR AIR CONDITIONING ☒ NOT USED
METHOD OF DRILLING	☐ CABLE TOOL ☒ ROTARY (CONVENTIONAL) ☐ ROTARY (REVERSE) ☐ ROTARY (AIR) ☐ AIR PERCUSSION	☐ BORING ☐ DIAMOND ☐ JETTING ☐ DRIVING

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW



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DRILLERS REMARKS

CONTRACTOR

NAME OF WELL CONTRACTOR Davidson Well Drilling Limited	LICENCE NUMBER 1737
ADDRESS Box 486, Wingham, Ont. NOG 2WO	
NAME OF DRILLER OR BORER G. Wright & G. Reavie	LICENCE NUMBER
SIGNATURE OF CONTRACTOR D. F. Davidson	SUBMISSION DATE DAY 3 MO Dec. YR 86.

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Ministry of the Environment
Ontario

WELL #6

WATER WELL RECOR

1405795

COUNTY OR DISTRICT Bruce	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE Brant	CON., BLOCK, TRACT, SURVEY, ETC. Con. 1 N.D.R.	LOT 7 &
OWNER (SURNAME FIRST) Walkerton P. U. C.	ADDRESS 201 Durham St., W., Walkerton Ontario		DATE COMPLETED DAY 16 MO June YR 82

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH FEET FROM	TO
Topsoil				0	
Brown	Sandy Clay	Gravel, Boulders		3	2
Lt. Brown	Limestone	Shale	Soft, Broken	20	2
Lt. Brown	Limestone	Shale layers	Med. soft	23	11
Lt. Brown	Limestone		Med. soft	117	17
Brown	Limestone		Hard	173	17
Lt. Brown	Limestone		Hard	179	19
Brown	Limestone		Hard	194	21
Grey	Limestone	Shale	Soft, layered	218	22
Brown	Limestone		Med. hard	224	237

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
28 46	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
71 89	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
106 115	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
173	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
186 201 218	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH FEET FROM	TO
13.50	☒ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE	.250	0	41
12.26	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☒ OPEN HOLE		41	237
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE			

SCREEN
SIZE(S) OF OPENING (SLOT NO.)
DIAMETER INCHES
LENGTH
MATERIAL AND TYPE
DEPTH TO TOP OF SCREEN

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

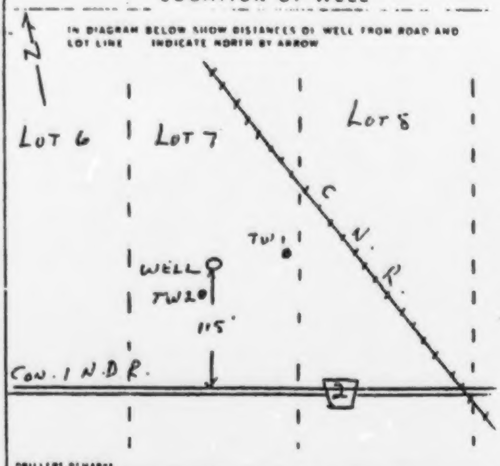
71 PUMPING TEST

PUMPING TEST METHOD ☒ PUMP ☐ BAILER		PUMPING RATE 280 Imp. GPM		DURATION OF PUMPING 72 HOURS 0 MINS	
STATIC LEVEL + 1'-10"	WATER LEVEL END OF PUMPING 95.18'	WATER LEVELS DURING ☒ PUMPING ☐ RECOVERY 15 MINUTES 54.43'	30 MINUTES 60.32'	45 MINUTES 65.63'	60 MINUTES 68.64'
IF FLOWING GIVE RATE GPM		PUMP INTAKE SET AT 138' FEET		WATER AT END OF TEST ☒ CLEAR ☐ CLOUDY	
RECOMMENDED PUMP TYPE ☐ SHALLOW ☒ DEEP		RECOMMENDED PUMP SETTING 120 FEET		RECOMMENDED PUMPING RATE 275 Imp GPM	

FINAL STATUS OF WELL	☒ WATER SUPPLY ☐ OBSERVATION WELL ☐ TEST HOLE ☐ RECHARGE WELL ☐ ABANDONED, INSUFFICIENT SUPPLY ☐ ABANDONED, POOR QUALITY ☐ UNFINISHED
WATER USE	☐ DOMESTIC ☐ STOCK ☐ IRRIGATION ☐ INDUSTRIAL ☐ OTHER ☐ COMMERCIAL ☒ MUNICIPAL ☐ PUBLIC SUPPLY ☐ COOLING OR AIR CONDITIONING ☐ NOT USED
METHOD OF DRILLING	☐ CABLE TOOL ☒ ROTARY (CONVENTIONAL) ☐ ROTARY (REVERSE) ☒ ROTARY (AIR) ☐ AIR PERCUSSION ☐ BORING ☐ DIAMOND ☐ JETTING ☐ DRIVING

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW



DRILLERS REMARKS

CONTRACTOR

NAME OF WELL CONTRACTOR Davidson Well Drilling Limited	LICENCE NUMBER 1737
ADDRESS P.O. Box 486, Wingham, Ontario	
NAME OF DRILLER OR BORER G. Reavie	LICENCE NUMBER
SIGNATURE OF CONTRACTOR	SUBMISSION DATE DAY 24 MO June YR 82

OFFICE USE ONLY

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FORM NO 0506

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

WELL # 7

COUNTY OR DISTRICT Bruce	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE Brent	CON. BLOCK, TRACT, SURVEY, ETC. Con. 1 DR N	LOT Pt 6
OWNER (SURNAME FIRST) WALKERTON P.U.C.	ADDRESS 4 Park St., Walkerton, Ont. NOG 2VO		DATE COMPLETED DAY 18 MO 04 YR 87

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
	Fill			0	2
Grey	Clay	Stones		2	8
Grey	Gravel	Stones, boulders		8	15
Grey	Clay	Stones	Hard	15	20
Lt. Bn	Limestone		Medium hard	20	99
Brown	Limestone		Medium soft	99	152
Lt. Bn	Limestone		Very fractured & loose	152	191
Brown	Limestone		Medium soft	191	228
Brown	Limestone		Broken, loose	228	233
Brown	Limestone		Medium soft	233	246
Brown	Limestone		Broken, soft, loose	246	249
Brown	Limestone		Medium soft	249	250

WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
54 104	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
148-180	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
229	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
247	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL

CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
15	☒ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE	.250	+6	45
24	☒ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE	.250	+1'4"	24
	(Flow Control)			
15	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☒ OPEN HOLE		45	250

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE		DEPTH TO TOP OF SCREEN FEET

PLUGGING & SEALING RECORD

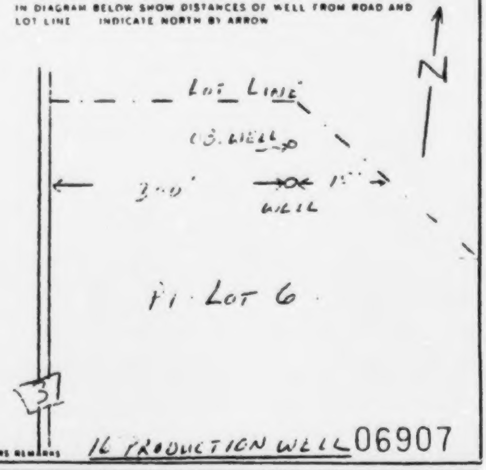
DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

PUMPING TEST

PUMPING TEST METHOD ☒ PUMP ☐ BAILER		PUMPING RATE 1200 Imp GPM		DURATION OF PUMPING 96 HOURS 0 MINS.	
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING ☒ PUMPING ☐ RECOVERY 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
Flowing	32.64	13.80	15.90	17.13	18.18
IF FLOWING GIVE RATE GPM		PUMP INTAKE SET AT 140 FEET		WATER AT END OF TEST ☒ CLEAR ☐ CLOUDY	
RECOMMENDED PUMP TYPE ☐ SHALLOW ☒ DEEP		RECOMMENDED PUMP SETTING 50 FEET		RECOMMENDED PUMPING RATE 1200 Imp GPM	

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW



DRILLERS REMARKS 16 PRODUCTION WELL 06907

FINAL STATUS OF WELL	☒ WATER SUPPLY ☐ OBSERVATION WELL ☐ TEST HOLE ☐ RECHARGE WELL ☐ ABANDONED, INSUFFICIENT SUPPLY ☐ ABANDONED, POOR QUALITY ☐ UNFINISHED
WATER USE	☐ DOMESTIC ☐ STOCK ☐ IRRIGATION ☐ INDUSTRIAL ☐ OTHER ☐ COMMERCIAL ☒ MUNICIPAL ☐ PUBLIC SUPPLY ☐ COOLING OR AIR CONDITIONING ☐ NOT USED
METHOD OF DRILLING	☒ CABLE TOOL ☐ ROTARY (CONVENTIONAL) ☐ ROTARY (REVERSE) ☒ ROTARY (AIR) ☐ AIR PERCUSSION ☐ BORING ☐ DIAMOND ☐ JETTING ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR Davidson Well Drilling Limited	LICENCE NUMBER 1737
ADDRESS Box 486, Wingham, Ontario NOG 2WO	
NAME OF DRILLER OR BORER R. Smith & Gary Reavie	LICENCE NUMBER
SIGNATURE OF CONTRACTOR	SUBMISSION DATE DAY 29 MO 05 YR 87

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FORM NO. 0506-4 77 FORM 7